Distribution in Chinese Affiliates of Japanese Automobile Firms

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Abstract

This paper tries to shed light on the answer to a very simple question: how do Japanese automobile and automobile parts makers supply their products and purchase parts/materials for the Chinese Market? Given Japan's strong comparative advantage in many related product categories and China's strong comparative disadvantage in the same categories, one would generally expect Japanese exports to provide a very large portion of the goods required. However, Japanese exports are also limited by China's high levels of import protection and logistic difficulties in getting goods to market in China. Many Japanese firms have thus sought to service the Chinese market directly from operations within China, often buying from and selling to other Japanese firms in China. The evidence collected in this paper suggests that the vast majority of sales are sent to other Japanese firms in China or to Chinese customers, while a much larger portion of purchases are made from Japan, either directly from Japanese suppliers or through their representatives in China. Finally, the study summarizes the results of detailed survey of six affiliates that was designed to illuminate how various distribution channels are used and the problems encountered with various channels.

Keywords: automobile industry, China, Japanese firms, distribution
JEL Categories: F14, F23, L14, L62, O14

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1. Introduction

Rapid economic growth and gradual policy reforms designed to expand the market economy have encouraged many multinational corporations (MNCs) to make large investments in China over the last decade. Japan's automobile and parts manufacturers have been no exception as they have struggled to expand in the increasingly important Chinese market (Kobayashi, 2004; Kobayashi and Ouno, 2005). The automobile industry is peculiar in that MNCs, which diversify production across international borders, dominate the industry to a much greater extent than most other industries (Plummer and Ramstetter 1991; Dobson and Chia 1997). Correspondingly, Chinese authorities, like those in many other developing countries, have long encouraged MNCs to contribute to the development of China's automobile industry, recognizing that the alternative of relying solely on local firms would probably result in a much less efficient industry.

The automobile industry is also distinguished by its frequent designation as a key industry in which the build up of indigenous capabilities is often thought to be critical in developing economies. Through its automobile policy initiative in 1994 (called the 1994 auto policy below), China also targeted this industry in a similar manner, encouraging consolidation among Chinese producers and protecting them with high tariffs, strict quotas, import licenses, as well as restrictions on foreign ownership.[1] There were also a plethora of other regulations, including those regarding local content, exporting, and technology transfer, many of which were implemented at the regional level and

[1] In 1994, the average tariff rate for automobiles was 110 percent in 1994, five times higher than the 22 percent average for 25 commodity groups that accounted for about 30 percent of China's imports in that years (Zhang et al. 1998, pp. 15-18). Average non-tariff barriers were roughly equal for automobiles and the 25 commodity group average (24 vs. 22 percent).

designed to promote national or regional production over imports and Chinese or regional firms over foreign-based MNCs.[2] The result was a rather confusing policy mix in which the pursuit of efficiency often conflicted with the goals of promoting national or local producers. China's accession to the World Trade Organization (WTO) included a commitment to dismantle many of the barriers to imports and restrictions on MNCs by 2005 or 2006 but a June 2004 announcement of "new auto rules" stressed how the new policy will both "loosen and tighten restrictions … from different perspectives" (Embassy of the People's Republic of China in the United States, 2004).

A large number of recent studies of the automobile industry in China, as well as of other manufacturing industries in China and other countries, have placed increasing emphasis on the importance of distribution networks or supply chains (Borrus, Ernst, and Haggard eds. 2000; Dicken 2003; Heaver 2004; Doner, Noble, and Ravenhill 2004; Takayasu and Mori 2004). These networks are particularly important in the automobile industry because the production process is extremely complex involving a large number of parts produced by a large number of firms in various locations. Some of these concerns are also reflected in recent studies of Japanese affiliates in China's automobile industry (Japan Finance Corporation for Small and Medium Enterprise 2003; Kobayashi 2004; Marukawa and Takayama eds. 2005; Tsuji and Wu 2004). However, we know of no previous studies focusing primarily on the nature of distribution networks used by Japanese automobile firms in China.

The primary purpose of this study is thus to contribute to this literature by shedding light on the

[2] See Gallagher (2003, p. 8-11) for a concise summary of the evolution of automobile policy in China.

answers to two very simple questions:

(1) Precisely how do Japanese automobile and automobile parts firms operating in China distribute their products and purchase parts/materials?

(2) What problems do these firms face when distributing products and purchasing parts and/or materials?

Although these questions are very straightforward analytically, comprehensive answers to the questions are complicated because distribution networks can differ greatly depending on:

(a) the location of buyers or suppliers,

(b) the ownership of buyers or suppliers,

(c) the means of transportation used in distribution

and

(d) the products or services to be distributed.

A comprehensive answer accounting for all of these elements is beyond the scope of any single study and this paper focuses primarily on the analysis of location-related, ownership-related, and transportation-related aspects of distribution channels and relevant policy issues. Other problems related to the nature of the products or services involved are also discussed as relevant.

Much of the evidence used to answer these questions is compiled from a series of field interviews conducted several parent firms in Japan and affiliates in Guangdong, China (Section 4). However, because it was only possible to interview a very few firms, it is very important to first put the interviews in proper context. This is first done by examining Japan's exports automobiles and

automobile parts to China (Section 2) and patterns of Japanese MNC involvement in China's automobile industry and related industries (Section 3). Major conclusions are then summarized (Section 5).

2. Exports of Automobiles and Automobile Parts from Japan to China

The analysis of international trade is an interesting point of departure in this context, because this is in many respects a classic textbook case where Japan has a strong comparative advantage in most product categories and China has a strong comparative disadvantage. Correspondingly, Table 1 shows that revealed comparative advantage indices (RCIs) exceeded 1 for most categories in Japan and were under this threshold for most categories in China.[3] Thus, one would expect international trade to be a major, if not the major means by which Japanese firms supply the Chinese market with automobiles and automobile parts.[4]

For example, in all categories of autos and trucks, Japanese RCIs were always above 1 and usually above 2, while Chinese RCIs were 0.3 or less since 1995. However, there was a marked downward trend in the Japanese RCI for small trucks, from 2.5 in 1993-1994 to 1.2 in 2003 and similar levels in 2000-2002 reflecting Japan's loss of comparative advantage in this category over the

[3] This index measures the ratio of the share of a given commodity category in total in exports in given country or countries (China and Japan in this case) to the share of that commodity category in world exports. Thus the RCI will exceed 1 if a country exports a relatively large amount of the commodity category compared to the world average and will be less than 1 if the reverse is true. If there are no factors driving wedges between prices and costs (such as imperfect competition, tariffs, quotas, and so on), RCIs will also exceed 1 when a country has a comparative (cost) advantage in a particular commodity, and hence the name for the index. In reality, a large number of factors cause prices and costs to diverge, with the result that the RCI cannot reveal patterns of comparative advantage in the strict sense. However, especially when RCIs display persistent trends over time, it is highly likely they do reveal important patterns of comparative advantage and its evolution.

[4] Traditional trade theory would suggest that this result obtains because China has relatively small endowments of factors used intensively in the production of autos and parts (e.g., capital, highly skilled labor) or relatively poor production technology in related industries.

last decade.

Chinese RCIs were also very low in most parts categories, less than 0.5 in 22-24 of the 28 parts categories through 2002 and in 17 of the 28 categories in 2003; RCIs were less than 1 in almost all categories. Thus, not only did China have a strong comparative disadvantage in autos and trucks, but also in the vast majority of parts categories. The single exception in which China appears to have developed a comparative advantage in recent years (2002-2003) is auto seats, though it is too early to tell if this is a long-term change resulting from changes in comparative advantage or a short-term fluctuation resulting from other factors. Meanwhile, Japan had RCIs exceeding 1 in most parts categories but the number of categories where RCIs exceeded 1.5 fell from 15 in 1993-1994 to 6 in 2002-2003. Japan's comparative advantage was therefore relatively weak and declining in most parts categories, the four major exceptions being small spark engines, engine parts, transmissions, and clutches and parts, where RCIs remained above 2 throughout this period.

Consistent with the patterns observed in RCIs, Japan's shares of Chinese imports were much larger for automobiles and automobile parts, almost half (48 percent) in 1993-1994 and a little under two-fifths thereafter, than for total imports, 23 percent in 1993-1994, 21 percent in 1995-1999, and 18 percent in 2000-2003 (calculated from Table 2). In 1993-1994, Japanese shares were slightly smaller for autos and trucks than for parts (46 percent vs. 51 percent) but this was reversed thereafter (42 percent vs. 36 percent in 1995-1999 and 41-56 percent vs. 31-35 percent in 2000-2003). Thus, China's imports from Japan tended to be relatively large in autos and trucks, partially reflecting the fact that Japan's RCIs tended to be much larger than in parts. Japan's proximity, both geographical

and cultural, makes transactions costs lower between these economies, than between China and Europe or North America, for example, and was another important factor leading China to source relatively large shares of all imports, including autos and parts, from Japan.

On the other hand, low income levels in China, combined with relatively high income elasticities for autos and parts, have helped keep the Chinese market a relatively small one for Japanese exporters in this industry (Table 3). For example, only 1-2 percent of Japanese exports of autos and parts were bound for China in 1993-2001, though this share did rise to 4 percent in 2003. This was in marked contrast to the experience in many other industries as China's share of Japan's total exports rose markedly from 3 percent in 1993-1994 to 12 percent in 2003 and China became one of the biggest customers for many of Japan's export industries.

Japanese data suggest much lower levels of Chinese imports from Japan that do corresponding Chinese estimates, about half (48 percent) in 1993-1994 and three quarters (73-77 percent) in subsequent years (Tables 2-3). One reason for the narrowing difference after 1994 was a change in China's classification of imports through Hong Kong. Differences in the classification of indirect trade though Hong Kong and other intermediaries probably explain a large portion of the difference between Japanese and Chinese estimates even after 1995. Another substantial portion (roughly 5-15 percent, depending on the product) can be explained by differences in valuation, because importers' (China's) estimates include transportation costs excluded from exporters' (Japan's) estimates.

Nonetheless, the comparisons of Japanese and Chinese estimates for shipments of Japanese autos and parts to China reveal some differences which are hard to explain. For example, although ratios of

Japanese estimates of exports to China to corresponding Chinese estimates of imports from Japan were only 73 percent in 1993-1994 and 81-91 percent 2000-2004, the ratio was 121 percent in 1995-1999. Another important difference between the Japanese and Chinese estimates is that Japanese estimates suggest that total exports grew much more rapidly between 1993-1994 and 2003 (4.8 times) than either autos and trucks (2.0 times) or parts (3.8 times). Chinese estimates concur by indicating that total imports (3.0 times) grew much more rapidly than autos and trucks (1.5 times) but differ by suggesting that parts imports grew more rapidly than the total imports (3.6 times).

As mentioned in the introduction, the 1994 auto policy was China's first comprehensive policy designed to promote the automobile industry. As a direct consequence of this policy change, China's imports of autos and trucks declined a very large amount (79 percent) between 1993-1994 and 1995-1999 and did not recover to 1993-1994 levels until 2002 (Table 2). Here again Chinese and Japanese estimates (Table 3) of Japan-China trade differ by a wide margin, with Chinese sources suggesting that imports of Japanese autos and trucks fell initially about the same amount (80 percent) as imports from the world, while Japanese estimates suggest a much smaller decline (55 percent). Chinese and Japanese estimates both indicate that the decline was particularly large in small trucks (under 5 tons) but Chinese figures indicate a much larger decline in autos than the Japanese figures.

On the other hand, the drive to expand domestic production capacity led to a large increase in the demand for parts. Total parts imports increased more or less continuously and were 5.7 times larger in 2003 than in 1993-1994. Imports of auto parts from Japan grew relatively slowly, however, increasing only 3.6 times during this period according to Chinese figures (3.8 times according to

Japanese figures). In recent years, the largest parts imports from both the world and from Japan have consisted of an ill-defined category of other parts, body parts, engine parts, transmissions, brake parts, and large engines.

An important element of the 1994 auto policy was the imposition of severe restrictions on imports from Japan and elsewhere. These restrictions were extremely severe and an important reason that Japanese automobile and parts makers were unable to export more to China during the 1994-2001 period. Even in 2005 China's most-favored nation (MFN) tariffs on automobiles remained rather high, an average of 39 percent across 30 tariff lines with a minimum of 25 percent (Table 4). Average MFN tariffs on trucks (21 percent) and parts (15 percent) were much lower, however, reflecting the key roles of these imports as inputs to the production of other goods and services. Another important characteristic is that general tariffs were much higher than MFN tariffs, an average 242 percent for automobiles, 52 percent for trucks, and 56 percent for parts. This difference is important because many imports were subject to the general tariff before China joined the World Trade Organization (WTO) at the end of 2001. China also used quotas and licenses to restrict imports of numerous automobile product categories (Xia 2000).

China's accession to the WTO was a watershed event for China's automobile and parts industries, primarily because it committed China to drastic reductions in import protection. In addition to making most exporters eligible for the lower MFN tariffs, China's WTO commitments included substantial tariff reductions due by 1 July 2006 and the elimination of quotas and import licensing by

2005 (Gallagher 2003, p. 10).[5] These declines in import protection are very substantial and their initial effects are one cause of the extremely rapid increases in China's imports of auto and parts observed in 2002 and 2003 (Tables 2). Moreover, these measures will have further, far-reaching effects on China's automobile and parts industries if implemented as scheduled. Correspondingly, in marked contrast to the last decade, it seems highly likely that Japan's exports of automobiles and parts will become an increasingly important avenue through which Japanese automakers supply their affiliates and other customers in the Chinese markets during the next few years. On the other hand, policy barriers to exporting into China have not been eliminated and the Chinese government continues to promote localization and employ relatively high tariff rates on fully assembled automobiles (Marukawa and Takayama eds. 2005, ch. 2).[6]

Nonetheless, the new auto policy of 2004 continues to give the impression that Chinese authorities are keen to control the access of foreign firms to China's rapidly growing automobile market. For example, a license system on the establishment of new automobile or engine plants is still kept, in which system the output must be exceed a certain large level. A foreign firm must establish a joint venture with a local Chinese firm for the production of complete automobiles and is allowed to have only one or two joint ventures for each type of automobiles (e.g. passenger cars, commercial cars, and motorbikes) respectively. The ownership share of foreign firms in a joint

[5] Tariffs on completed vehicles are to fall from 80-100 percent to 25 percent and tariffs on parts are to fall from 35 percent to 10 percent.

[6] For example, partially in response to a rapid increase in imports of parts used in assembling knock-down kits, between 2002 and 2004, the Chinese government promulgated a new regulation on it, under which it stipulated that the rate for parts used in knock-down kits would only apply in if the share of local parts is 60 percent or more of the total and if the share of local value added in total manufacturing cost is 70 percent or more (Fourin 2005).

venture is still limited up to 50 percent, although this restriction is not applied in the case of production for export.

3. Japan's MNCs in China: Patterns of Entry, Sales, and Procurement

Partially because tariffs, quotas, and import license requirements have made it difficult for Japanese auto and parts' firms to supply the Chinese market by exporting, especially after 1994, many of these firms have chosen to set up affiliates that produce and market directly in China. Of course, direct investment in China offers other important benefits to Japanese MNCs, most notably the ability to reduce marketing costs for products sold in China, adapt production lines to the needs of the Chinese market, utilize factors of production that are relatively cheap in China (e.g., unskilled or moderately skilled labor), and improve aftercare and related services.

Estimates from Toyo Keizai (Table 5) and official sources (Table 6) both indicate that the number of Japanese affiliates in China's transportation machinery manufacturing industry and their employment increased very rapidly in 1996, but much more slowly in subsequent years.[7] According to Toyo Keizai estimates the number of affiliates grew 68 percent to 136 in 1996, while official estimates indicate a slower 33 percent increase to a lower number of 89 affiliates. Estimates of

[7] Both the Toyo Keizai estimates in Table 5 and the official estimates in Table 6 are incomplete because surveys do not include all affiliates and some affiliates do not report employment. However, the coverage problems are generally less severe for in the Toyo Keizai data. For example, in all industries and in manufacturing, Toyo Keizai reports a much larger number of affiliates in 1995-2002 (by 44-74 percent), a larger number of employees in 1995-2001 (by 2-22 percent), and a somewhat steadier growth of affiliate employment in 1996-2002. However, in contrast to other years, the Toyo Keizai estimates of employment are slightly smaller in 2002 (by 1-2 percent). In transportation machinery Toyo Keizai estimates are also substantially larger for the number of affiliates (by 19-56 percent) but are smaller for affiliate employment (by 6-36 percent). The consistent differences in the estimates for transportation machinery manufacturing suggest that the classification of a few large firms differs between the two sources.

affiliate employment levels (45,317 by Toyo Keizai and 51,775 by official sources) and growth (81 percent and 72 percent, respectively) as were more similar for 1996, however. Official estimates also indicate a similarly large increase in sales during this year (89 percent).

In contrast, growth rates for affiliates in transportation machinery manufacturing were much slower for the five years from 1996 to 2001 than for the single year between 1995 and 1996. Toyo Keizai estimates suggest an 11 percent increase in the number of affiliates and 14 percent in the number of employees (Table 5). Official estimates indicate somewhat larger, but still rather small increases of 24 percent and 23 percent, respectively (Table 6). According to official estimates there was another moderately large increase in 2002 to 132 affiliates (a 20 percent increase over 2001) and 79,189 employees (a 25 percent increase). Toyo Keizai estimates do not reveal a large increase in 2002, but do suggest moderately large increases in 2003 to 197 firms (a 25 percent increase over 2002) and 57,426 employees (a 13 percent increase).

The Toyo Keizai estimates provide more industry detail and indicate that affiliates involved in the manufacturing of automobiles and related parts accounted for the vast majority of transportation machinery affiliate activity in most years. There were notable increases in these shares over time, however. For example, in 1995 employment in auto and parts' affiliates amounted to only about three-fifths of the employment in all transportation machinery affiliates, but this ratio increased to slightly over three-fourths in 1996-1997, slightly over four-fifths in 1998-2000, and 93-96 percent in 2001-2003 (Table 6). Casual examination of the firm-level data suggests that a significant portion of these increases appear to be the result of reclassifying affiliates originally specializing in production

related to two-wheeled vehicles (mainly motorcycles) and then shifting to production related to four-wheeled vehicles.[8]

To some extent, the large surge of transportation affiliate numbers and their employment in 1996 was probably a reaction to the 1994 auto policy, which made it very difficult for foreign firms to supply the Chinese market from outside the country (see Section 2). In addition, this increase was almost certainly related to the continued rapid growth of the Chinese economy, and the growing perception that the Chinese boom was likely to continue some time into the future. Another factor was that Japanese auto firms were relative latecomers to the Chinese market (especially compared to Volkswagen) and were anxious to make up ground on their competitors in this oligopolistic market. Prominent announcements by major Japanese producers, most notably Honda and Toyota, of intentions to expand their Chinese operations, also encouraged related parts firms to draw up their own investment plans.

The second, smaller surge after 2002 was partially related to WTO-related reforms, which greatly simplified some investment procedures and relaxed some regulations on MNCs. As in 1996, it also resulted from continued rapid growth in China overall and in China's automobile industry in particular. Growing production by Japanese final assemblers also led to increases in the demand for parts and investments by parts makers.[9] The rapid growth of the Chinese economy, combined with its large size, continued to be probably been the most important attraction for MNCs in all industries

[8] Changes in the Toyo Keizai classification system may also have been important.

[9] For example, new affiliates (for manufacturing complete cars) of major Japanese automobile assemblers starting operations after 2002 include Dongfeng Honda Automobile (Wuhan) in 2004 (Honda), Dongfeng Motor in 2003 (Nissan), Guangzhou Toyota Motor in 2006 (Toyota; see Appendix Table 2).

and of all nationalities. For example, primarily as a result of continued rapid overall growth, China's automobile market is estimated to grow to 6.95 million units by 2010 and become the second largest worldwide, after the United States (Fourin, 2004). Correspondingly, Japan's automakers have put an increasing emphasis on finding ways to compete in this large market.

The rapid growth of MNCs in China's automobile and parts' industries occurred despite China's imposition of several restrictions and performance requirements on the investing MNCs. Under the 1994 auto policy, restrictions on foreign ownership shares and on the number of joint ventures allowed in a product line were been among the most prominent policy measures employed and these policies will apparently remain in effect in a slightly relaxed form even after the WTO agreement is implemented.[10] On the other hand previously strict government requirements regarding technology transfer, maintaining foreign exchange and trade balances, and local content requirements are to be eliminated under the WTO agreement (Gallagher 2003, p. 10). Provincial governments will also be given the authority to approve foreign direct investment projects up to US$150 million by 2005.

Official estimates clearly illustrate the strong pull of the Chinese market for transportation machinery affiliates of Japanese MNCs, which sold more than three-fourths of their output in China (Table 6). The share of production sold on the local market is much larger for transportation machinery affiliates than the averages for affiliates in manufacturing or all industries (45-62 percent). Although transportation machinery affiliates are clearly much more local market oriented than

[10] For example the Embassy of the People's Republic of China in the United States (2004) states that the new (2004) auto policy will allow shares exceeding 50 percent in joint ventures if they "…are built in China's export processing zones and shoot at overseas markets." Likewise the previous limit on the number of joint ventures was also limited to no more than two for each vehicle category under the old (1994) policy, but the same source says this limit will now be relaxed under the new policy if the additional joint venture is created through a merger with a Chinese firm.

affiliates in other industries, the share of local sales in the total has gradually fallen from 86-90 percent in 1995-1997 and 1999 to 76-82 percent in 2001-2002, most of this decline being offset by an increase in the share of sales sent to the Japanese market (from 5-6 percent to 14-15 percent). Thus, although there are some indications that foreign automobile makers intend to make China an export base for autos and parts, exports of Japanese affiliates are still rather limited. Moreover, only labor-intensive parts such as wire harnesses, switches, and car audios are competitive on export markets.

Transportation machinery affiliates also source more of their purchases from the local market than the average Japanese affiliate in China, though differences between transportation machinery affiliates and other affiliates are relatively small in the case of purchases. For example, the percentage of purchases sourced from the local fluctuated between 42 and 64 percent in transportation machinery, compared to averages of 29-52 percent in manufacturing and 34-56 percent in all industries (Table 6). There was a general trend toward higher local purchase ratios in all these categories. However, in transportation machinery, a much larger portion of imported parts and materials (88-95 percent of imports) were sourced from Japan than in manufacturing (64-76 percent) or all industries (46-80 percent). This reflects both the strong comparative advantage of Japan in many of the parts and materials used by Japanese automakers (Section 2) and strong inter-firm networks among Japanese automobile manufactures and their parts suppliers in Japan. The increasing local purchase ratio also reflects the expansion of Japanese parts affiliates in China, many of which have coordinated their investment plans with partner automobile manufacturers whom they

supply, most of which are other Japanese firms.

The large size of sales by trade affiliates is a conspicuous and distinctive feature Japanese MNC activity in most countries. For example in 2002, trade affiliates accounted for almost half (48 percent) of all affiliate sales worldwide and just over two-fifths (41 percent) of all affiliate sales in Asia (Japan, Ministry of Economy, Trade and Industry, various years). This is much higher than corresponding shares for U.S. MNCs, for example.[11] However, the share of trade affiliates is much smaller in China, between 17-26 percent in 1995-2003 (Table 6). Smaller shares are common in developing economies such as China partially because marketing opportunities for trading firms are relatively limited in lower income economies and because host country policies often severely restrict the activities of foreign MNCs in the trade sector, as has been the case in China. Trade affiliates are also much smaller in terms of employment than in terms of sales, accounting for 4 percent or less of Japanese affiliate in China according to both official and Toyo Keizai estimates. Generally, there are three major types of firms included in the trade category, wholesale traders, retail traders, and restaurants. Retailers and restaurants are relatively large in terms of employment but somewhat smaller in terms of the number of affiliates and probably much smaller in terms of sales.[12]

There are also two distinct types of wholesale traders, general trading companies and other traders, which are often sales affiliates of major manufacturers such as Toyota or Honda. Unfortunately, it is impossible to ascertain the extent of general traders' involvement in the wholesale

[11] In 2002, sales of trade affiliates accounted for slightly over one-fourth of U.S. affiliate sales worldwide (26 percent) and in the Asia-Pacific (27 percent, United States, Bureau of Economic Analysis 2004).
[12] According to Toyo Keizai (various years), in China, retail trade and restaurants accounted for 41-72 percent of affiliate employment but 31-61 percent of affiliate numbers in 1995-2003.

trade of autos and parts or transportation machinery in general. On the other hand, the Toyo Keizai data suggest that there have never been more than 19 wholesale traders specializing in autos and parts (in 2001) and that these wholesale traders employed less than 1,000 employees in all years except 1999.[13]

One final pattern of note is the rapid growth of affiliates in storage and physical distribution as well as in other transportation services. In storage and physical distribution, the number of affiliates increased 3.7 fold from 16 in 1995 to 59 in 2003, the employment of these affiliates increased by 14 times from 419 to 5,877 respectively (Table 5). The number of affiliates in other transportation services also increased 3.0-fold to 74 in 2003, while the employment of these affiliates increased 3.2-fold to 6,653. Although most of these affiliates are not involved in the auto and/or parts industries, several of them are. Increased networking among manufacturers, traders, and so-called logistics firms, many of which are classified in these categories, is an important phenomenon in many industries including automobiles and parts.

4. Distribution in Japanese Automobile and Parts' Affiliates: Six Case Studies

Taken together, the trade and MNC data presented in the previous sections show that (1) imports from Japan are an important means through which Japanese auto and parts makers supply their affiliates in China, but the importance of this channel has been declining, partially as a result of the 1994 auto policy, (2) Japanese affiliates grew very rapidly in 1996 and again in 2002-2003, again

[13] The large employment figure in 1999 resulted from the inclusion of one large affiliate (Beijing Light Automobile Co., Ltd.) with 5,236 employees, which was excluded in 1995-1998 and 2000-2003.

partially as a result of policy changes in China, and (3) Japanese affiliates in China market sell the vast majority of their production on the local market. One the other hand, these data do not reveal the extent of transactions among Japanese affiliates in China, nor do they facilitate evaluation of the problems encountered when using various distribution channels. Because much of the rapid growth of parts affiliates in China is thought to result from efforts to service Japanese assemblers in China, we surveyed six Japanese affiliates in Guangdong Province in May 2005 with the primary aim of ascertaining:

(1) the extent to which alternative distribution channels were used for both sales of goods produced and inputs, and

(2) the nature of the problems encountered when using alternative distribution channels.

Before proceeding it is important to note two fundamental problems with the case study approach used here. The primary problem is small sample size. Because the survey could only cover a very small number of firms, there is no practical way to test the statistical reliability of the results obtained. Accordingly, the analysis of the survey results is highly descriptive and of questionable reliability. A related, second problem is that the small sample size creates a very high probability of sample selection bias. In other words, small sample size makes it extremely likely that the firms we have studied are not representative of the universe of similar firms. Indeed, our sample firms seem to be rather peculiar in several important respects, as will be illustrated by comparisons of our survey data with the more comprehensive data summarized in the previous sections of this paper.

4a. Japanese Affiliates in Guangdong and Comparisons with Sample Firms

Small sample size results from the fact that limited resources made it possible to conduct in depth interviews with only 10 affiliates located in the Guangzhou area of Guangdong Province in southern China. The Guangzhou area was chosen primarily because three major Japanese auto makers (i.e. Honda, Nissan and Toyota) have begun or plan to begin large scale assembly operations in the area and their combined output is expected to reach 500 thousand units or more in 2006 (Fourin 2005).[14] Thus, although the automobile industry has heretofore been relatively small in Guangdong,[15] there are indications that it is likely to grow relatively rapidly in the coming years.

By 2004-2005, there were 47 Japanese auto and parts makers with affiliates in Guangdong, (Table 7). They had 40 affiliates known to have positive employment in Guangdong and another 87 affiliates operating elsewhere in China. The Guangdong affiliates employed 25,471 workers, slightly less than two-fifths (39 percent) of the total country-wide. Almost nine-tenths (35) of the Guangdong affiliates with positive employment were involved in manufacturing of autos and parts, and these affiliates accounted for exactly four-fifths of affiliate employment in Guangdong. Affiliates in Guangdong were thus more concentrated in auto and parts manufacturing than elsewhere in China, but differences in employment shares were not large between Guangdong and the all China.[16] Auto

[14] According to Fourin (2005), Guangzhou accounted for 7.5 percent of all Japanese parts affiliates that entered China between 1984 and February 2005. Shanghai, (25.5 percent) and Tianjin (15.1 percent) attracted the largest number, but if Guangzhou is combined with four nearby cities (Dongguan, Shenzhen, Zhongshan and Foshan), this area attracted 16.8 percent of the total.

[15] For example, Guangdong accounted for only 5.2 percent of China's total output of autos and parts in 2003 (Fourin 2004), compared to a 10.1 percent share in the sum of gross regional product (China, National Bureau of Statistics various years). Note that the sum of gross regional product is substantially larger than GDP in China.

[16] In China as a whole, 75 percent of the affiliates with positive employment were involved in manufacturing of autos and parts, and these affiliates accounted for 78 percent of total affiliate employment.

and parts affiliates in Guangdong were about one-tenth larger than the Chinese average with 583 employees per firm and were slightly newer with a mean startup year of 2001. They also tended to have slightly higher Japanese and parent ownership shares than the Chinese average, though here again the difference was not large and Japanese ownership shares were generally large, an average over four-fifths for all Chinese affiliates.

The few affiliates involved in the manufacture of other transportation machinery, mainly motorcycles, tended to be much larger, than most affiliates of these 47 companies, have lower Japanese and parent ownership shares, and were much older with an average startup in the mid-1990s (Table 7). Affiliates in other industries differ greatly in Guangdong and elsewhere in China. Although other industries accounted for 6-7 percent of employment in all industries in both China as a whole and Guangdong, only 3 of 40 (8 percent) affiliates belonged to other industries in Guangdong, compared to 25 of 127 (20 percent) in China as a whole. Thus, in other industries, Guangdong affiliates are much larger and have much lower Japanese and parent ownership shares, though average startup is similar for each group.

Fieldwork was conducted in Guangdong (especially around Guangzhou) in July 2004 and May 2005 when detailed information on sales and purchases was obtained from six Japanese parts' makers. Our primary sample thus consists of six parts' firms, which represent 17 percent of the 35 auto and parts' manufacturing affiliates that reported positive employment, but only employed a total of 1,527 workers or 7 percent of 20,399 employed by all 35 firms (Tables 7, 8). Compared to the average affiliate in auto and parts' manufacturing, our sample firms were generally smaller (an

average of only 255 workers per firm), somewhat newer, and had relatively low parent ownership shares. Total Japanese ownership shares were also lower, but not by much. The following analysis also utilizes information gathered in interviews with four other firms, two of which operated in other industries (1 Japanese auto assembler and 1 Japanese physical distribution company), one of which was a Chinese parts maker that supplied Japanese auto and motorcycle assemblers in Guangdong, and one of which was a Japanese parts company which was unable to provide details supplied by other firms.

4b. Sales and Purchases in Surveyed Firms

Four of the six firms in the primary sample sold a very large share (70 percent or more) of their output to other Japanese firms operating in Guangdong, while another firm sold a large amount of its output to Japanese firms operating elsewhere in China (Table 9). Moreover, all six affiliates supplied more than 90 percent of their total sales to Japanese firms in Guangdong or elsewhere in China. Only two of them sold small portion of their products to Chinese or other firms. None of them exported their products directly. The total reliance on local markets is an important distinguishing characteristic of these sample firms. Five of the six the surveyed firms indicated that the main reason for locating their plants in Guangdong was to supply one or more of major Japanese auto assemblers in Guangzhou and/or to create a strategic foothold in South China. The most urgent priority was to create additional production capacity to meet increasing demand from main customers (i.e. major Japanese car assemblers). In contrast, exporting and refining the international division of labor

among the Asian affiliates were not high priorities, but might be explored in the future.

In contrast, four of the six affiliates studied here imported a large portion (70 percent or more) of their purchases from Japan, while one imported a moderate portion (31-69 percent), and the last firm imported small portion (1-30 percent, Table 9). In addition, one firm purchased a large share and another purchased a moderate share from Japanese firms in China. In other words, most firms (5 of 6) imported moderate or large shares from Japan and a few firms (2 of 6) purchased moderate or large shares from Japanese firms in China. Other distribution channels were used much less frequently. Three firms purchased small shares via imports from elsewhere and Chinese firms in China, and all six firms did not source from other (non-Japanese, non-Chinese) firms in China.

Like the exclusive reliance on local markets, the extremely high reliance on imported materials and parts, and on imports from Japan in particular, distinguishes this sample of parts' firms sharply from the average transportation machinery affiliate, which sourced about three-fifths (62 percent) of their inputs locally and imported about one-third (34 percent) from Japan in 2001-2002 according to official estimates (Table 6). A major Japanese car assembler in Guangzhou also said its local content rate reached 60-90 percent as of July 2004. However, the official figures and the assembler's data probably underestimate the importance of imported inputs used by transportation machinery affiliates because local purchases include some imported inputs purchased indirectly from other foreign affiliates (often trading firms or physical distribution firms) operating in China. Moreover, the import content of many locally produced inputs is often quite high (as in these six affiliates). Recognition of these facts led one of the affiliates to speculate that the actual local content rate is

perhaps 20-30 percent lower than formally reported.

All of the surveyed firms also said they purchased an unusually large portion of parts and materials from Japan, as well as from Japanese firms in China in order to guarantee the same quality as in Japan, as required by their customers. Another firm also said it took the trouble of purchasing some parts and material from distant suppliers within China for the same reason. In China, it is not easy to increase local content and at the same time maintain the quality standards required major customers (i.e. major Japanese auto assemblers). In many cases, these standards are quite strict and the use of locally made parts and materials must be approved by Japanese headquarters and customers. On the other hand, four firms said that increasing local content will be an important part of cost reduction efforts in the future, and four firms also indicated that the costs for parts and materials accounted for 50 percent or more of total revenues.

4c. Problems with Alternative Distribution Channels

Firms were also asked to describe the nature of the problems they encountered when using the alternative distribution channels identified in the previous section.[17] The problems identified fell into five broad categories, poor transportation infrastructure (problem A in Table 9, poor or costly delivery services (problem B), high taxes (problem C), strict government regulations (problem D), and customs procedures (column E).

Regarding sales the interviews revealed an outstanding contrast. Four firms reported no problems

[17] There are numerous other possible distribution channels, but they were not used by the surveyed firms and are thus not relevant here.

when selling to Japanese customers in Guangdong, but only one firm reported no problems when selling to Japanese firms elsewhere in China and the single firm that reported sales to local Chinese firms identified several problems. In other words, transactions costs appear to be higher (i.e., problems are more common) when dealing with relatively unknown (Chinese) customers and with customers who are located relatively far away. One of the three firms that reported problems with sales is rather peculiar in that it is located in an export processing zone but its customers are located in China outside of bonded zones. All of its sales must thus go through customs and the firm reported problems with high tariffs and customs procedures. This firm also reported problems with transport infrastructure (congestion) and high transportation costs. One of the other two firms reporting problems with sales also indicated that transport infrastructure (poor roads, congestion) was a problem, in addition to strict government regulations on load limits and on when vehicles could enter certain urban areas. The final complaint regarding sales involved supervision of Chinese distributors.

At first glance it appears that fewer problems were reported to affect the purchasing of inputs, but it is also important to note that most of the problems with sales (16 of 22 reported problems) were reported by the firm located in the export processing zone but servicing the Chinese market. The same firm also reported a smaller but substantial number of the problems on the purchasing side (4 the 10 reported problems). The other five firms thus reported the same number of problems on the purchasing side (6). However, in contrast to the sales side, the incidence of firms reporting no problems with alternative distribution channels was very low, only 1 firm each for imports from Japan and for purchases from Japanese or Chinese firms in China.

By far the largest number of complaints about purchases involved customs procedures for imports from Japan (5 firms) and imports from elsewhere (2 firms). Interestingly, none of the firms indicated that high taxes (including import tariffs) or strict government regulations were a problem with any of the distribution channels used. Thus, when purchasing inputs, firms are not so worried about the tariffs described in Section 2, but are quite concerned about customs procedures which can be quite inconsistent, unpredictable, and time consuming. The poor quality of public servants also makes it difficult for import regulations to be efficiently implemented.[18] The timing of the interviews may also be related to the frequent citation of this problem as import application procedures were reported to have become more complicated since the beginning of 2005.[19] Two firms also reported problems with delivery services when sourcing inputs from local Chinese firms but only one reported problems with transport infrastructure.

In sum, Chinese customs procedures represent one of the most important constraints on all cross-boarder transactions (including transactions between firms in export processing zones and outside of them) in our sample firms. The high tariffs discussed in Section 2 are a less commonly mentioned problem, however. One possible reason is that some of the interviewed firms are eligible to import at rates lower than the standard rates. Another possibility is that firms have become accustomed to operating with the high tariffs and have structured their operations to account for them. In this respect, firms in China and elsewhere often say they find unpredictability in customs

[18] For example, according to Shirado (2004), customs officials must have broad knowledge about not only customs law, but also many other laws and regulations related to importing and exporting, general practices in international trade, and technical as well as the scientific features of traded goods. Many Chinese customs officials are short of such knowledge.

[19] Firms must now submit more detailed documentation on items to be imported (including transportation routes used).and import licenses must then be issued by the central government in Beijing for specific items.

procedures the most difficult problem to deal. It is also notable that none of the firms mentioned policy barriers to internal trade (within China) as being important, because China's commitment to remove taxes and other restrictions on internal trade were often thought to be among the more important aspects of China's WTO accession that remain to be fully implemented (Rumbaugh and Blancher 2004, pp. 7-10).

The second major cluster of problems relates primarily to problems with transportation, including problems with the transportation infrastructure itself, problems related to poor quality and high cost of locally available distribution services, and with regulations such as those regarding load limits and time limits on urban access. In many respects, these problems are typical of a fast growing low-middle income country, where increases in the demand for infrastructure services often outstrip the growth of supply. Given a set of transportation infrastructure, the frequency with which transportation-related problems are observed depends partially on the method of shipment and the nature of the shipper. The frequency of problems is also related to the location of suppliers or buyers, which is also reflected in the choice of transportation method. For example, road transport was by far the most frequently used method of transportation. Three or more firms said they used road transport with only five distribution channels, sales to Japanese firms in Guangdong and elsewhere in China, imports from Japan, and purchases from Chinese or Japanese firms in China. When importing, all importers reported importing by water and then transporting by road. When importing from Japan, all firms used Japanese shippers (one firm also mentioned using other foreign distributors) and then Chinese trucking companies.

All the transportation-related problems identified by the surveyed firms related to road transport, namely poor physical infrastructure and congestion (A), poor services in Chinese distributors and high transportation costs (B), and strict regulations on loads and entry into urban areas during designated times of the day (D). Moreover all of these problems related to sales to Japanese or Chinese firms operating in China or to purchases from Chinese firms. There were few specific complaints about distributors, but one company mentioned problems supervising a Chinese distribution company and another mentioned high costs in relation to a distribution channel serviced by Japanese distributors though the latter complaint was probably generic, not distributor-specific. Conspicuously, there were no major problems related to the transport of imports, even though all firms used ground transport when importing.

5. Conclusions

This paper tries to shed light on the answer to a very simple question: how do Japanese automobile and automobile parts makers supply their products and purchase parts/materials for the Chinese Market? Given the combination of Japan's strong comparative advantage and China's strong comparative disadvantage, as well as the close proximity of the economies which reduces transactions costs related to international trade, one would obviously expect a large portion of affiliate purchases to be in the form of imports from Japan. Correspondingly, Section 2 showed that Japan was indeed a relatively large exporter (RCIs were large) in most of the relevant product categories and that Chinese got a relatively large portion of its imports in these categories from Japan.

One the other hand, probably because China is still a relatively low-income economy and many of these goods are income elastic, China was a relatively small market for Japanese exporters in most of these product categories. Trends in Chinese imports, both from the world and from Japan, were also related to changes in Chinese policy, in particular the increased protection and reduced imports that followed the implementation of the 1994 auto policy. In contrast, China's exports were relatively small (RCIs were low) in almost all of the relevant product categories.

The paper then showed that many Japanese MNCs entered the manufacture of transportation machinery in China after 1996, when the effects of the auto policy became obvious and high growth had continued for some years. The main goal of transportation machinery affiliates has been to service the local Chinese market and they have always sold the vast majority of their output in China, though the share of local sales fell some in recent years to about three-fourths. There was also another, smaller increase in affiliate activity in 2002-2003 as reforms related to the WTO accession, which had the opposite effect as the 1994 policy in many respects, came into force. Imports from Japan have been an important but declining source of raw materials and parts for Japanese affiliates. Conversely, the local content ratio has risen, with many of the raw materials and parts being supplied by other Japanese affiliates in China. Here it is important to note that local purchases include both indirect purchases of imported products (e.g., through trading companies) and that locally produced parts often have a large amount of import content themselves.

This was illustrated in a sample of 6 parts firms, all of which used two main distribution channels, importing parts and materials from Japan and selling products to other Japanese firms in

Guangdong. Most (5) of these firms imported the vast majority of their inputs and all of them sold all their output in China, mainly in Guangdong. Most (5) also said that customs procedures, particularly their time-consuming nature, were a major problem when importing, but most (4) of the firms also reported they had no major problems selling output to Japanese firms in Guangdong. Half of the firms or more also sold to Japanese firms elsewhere in China (4) and purchased from Japanese firms (3) or Chinese firms (3) in China. When shipping to and from other firms in China, the major problems were related to transportation infrastructure, poor or expensive delivery services, and strict regulations on load limits and urban access times. Although imports were carried by both boat and road, the firms mentioned no transportation-related problems when importing. Moreover, no firm cited barriers to internal trade as a problem. In short, the major problems faced by parts affiliates relate to import procedures and transportation in China. This is perhaps no surprise in a country which has a legacy of high protection and in which rapid growth has put large trains on infrastructure-based service industries such as transportation.

In closing, we must stress that the results of this small survey are almost certainly biased because of the small number of firms included and their special characteristics. It would thus be very informative if similar interviews could be conducted with a large number of firms (50-100) and more formal statistical analysis of the results could be presented. However, the case study approach used here also has important strengths, in particular the ability to provide details often missed in studies of larger samples. In this respect, the results of this study are a useful tool for those seeking to understand more about selling and purchasing behavior in various groups of firms.

References

Borrus, Michael, Dieter Ernst, and Stephan Haggard, eds., 2000. *International Production Networks in Asia: Rivalry or Riches?* London: Routledge.

China Council for the Promotion of International Trade. 2005. Custom's Tariff Data form (http://www.ccpit.org/servlet/org.servlet.GenTariffFrontServlet?actionType=QuerySectionListEn).

China, National Bureau of Statistics, various years a. *China Statistical Yearbook*, 1999-2004 issues and electronic data on accompanying CD-ROMs. Beijing: China Statistics Press.

Dicken, Peter, 2003. "Global Production Networks in Europe and East Asia: The Automobile Components Industries", GPN Working Paper No. 7, Manchester, U.K.: The University of Manchester (http://www.sed.manchester.ac.uk/geography/research/gpn/gpnwp7.pdf).:

Dobson, Wendy and Chia Siow Yue, 1997. *Multinationals and East Asian Integration*. Toronto: International Development Research Centre and Singapore: Institute of Southeast Asian Studies.

Doner, Richard, Gregory W. Noble and John Ravenhill, 2004. "Production Networks in East Asia's Auto Parts Industry", in Yusuf, Shahid, Anjum Altaf and Kaoru Nabeshima (eds.), *Global Production Networking and Technological Change in East Asia*, Washington, D.C.: The World Bank, 159-208.

Embassy of the People's Republic of China in the United States, 2004. "China issues new auto rules (03/06/04)", http://www.china-embassy.org/eng/gyzg/t127767.htm.

Fourin, 2004. *Cyuugoku Zidousya Sangyou [Chinese Automobile Industry, 2004/2005]*. Tokyo: FOURIN (in Japanese).

Fourin, 2005. *Cyuugoku Shinsyutu Sekai Buhin Maker Souran [The Compendium of World Automobile Parts Makers Advancing into China]*. Tokyo: FOURIN (in Japanese).

Gallagher, Kelly Sims, 2003. "Foreign Technology in China's Automobile Industry: Implication for Energy, Economic Development, and Environment", in Turner, Jennifer L., ed., *China Environment Series Issue 6*, 1-17. Washington D.C.: The Woodrow Wilson Center.

Heaver, Trevor D., 2004. "Logistics in East Asia", in Yusuf, Shahid, Anjum Altaf and Kaoru Nabeshima (eds.), *Global Production Networking and Technological Change in East Asia*, 297-351. Washington, D.C.: The World Bank.

Japan Finance Corporation for Small and Medium Enterprise (JASME), 2003. *Oute Zidousya Maker No Cyuugoku Shinsyutu To Tyuusyou Buhin Sangyou Heno Eikyou To Taiou [The Advance into China by Major Automobile Parts Makers and Its Impact on Small and Medium Parts Makers and Reactions]* (JASME Report No. 2002-2). Tokyo (in Japanese).

Japan, Ministry of Economy, Trade and Industry, various years. *Dai __ Kai Wagakuni Kigyou no Gaikai Jigyou Katsudou [The __ Survey of Overseas Business Activities of Japanese Companies]*, Surveys Number 26 (1995), No. 27 (1996), No. 28 (1997), No. 29 (1998), No. 30 (1999), No. 31 (2000), No. 32 (2001), No. 33 (2002). Tokyo: Ministry of Finance Printing Bureau (in Japanese; through Survey No. 28, the author was known as Japan, Ministry of International Trade and Industry) (in Japanese).

Kobayashi, Hideo, 2004. *Nihon Zidousya & Buhin Sangyou To Cyuugoku Senryaku: Kachigumi wo Mezasu Sinario* [*Strategy for China of the Japanese Automobiles and Parts Industry: A Scenario for a Winner]*. Tokyo: Kougyouchyousakai (in Japanese).

Kobayashi, Hideo and Ouno Haruo, 2005. *Gurobaru Henkaku Ni Muketa Nihon No Zidousya Buhin Sangyou [The Japanese Automobile Parts Industry towards Global Transformation]*. Tokyo: Kougyouchyousakai (in Japanese).

Marukawa, Tomoo and Takayama, Yuuichi, eds., 2005. *Gurobal Kyousou Zidai No Cyuugoku Zidousya Sangyou, Shin pan [The Chinese Automobile Industry in the Global Competition Era, New Edition]*. Tokyo: Sousousya (in Japanese).

Plummer, Michael G. and Eric D. Ramstetter, 1991. "Multinational Affiliates and the Changing Division of Labor in the Asia-Pacific Region," in Eric D. Ramstetter, ed., *Direct Foreign Investment in Asia's Developing Economies and Structural Change in the Asia-Pacific Region*, Boulder, CO: Westview Press, pp. 239-275.

Rumbaugh, Thomas and Nicolas Blancher, 2004. "China: International Trade and WTO Accession." IMF Working Paper 2004-36. Washington, D.C.: International Monetary Fund.

Shirado, Shigeo, 2004. "Butsuryuu Senryaku" [The Physical Distribution Strategy], in Power Trading Co., Ltd., ed., *Cyuugoku Sinsyutu Kigyou Keiei Senryaku Guidebook [A Guidebook for the Management Strategy of Companies Advancing into China]*, 317-386. Tokyo: Asuka Publishing Company (in Japanese).

Takayasu, Ken'ichi and Minako Mori, 2004. "The Global Strategies of Japanese Vehicle Assemblers and the Implications for the Thai Automobile Industries", in Yusuf, Shahid, Anjum Altaf and Kaoru Nabeshima, eds., *Global Production Networking and Technological Change in East Asia*, 209-253. Washington, D.C.: The World Bank.

Tsuji, Masatsugu and Quan Wu, 2004. "Localization and Dispersion of the Chinese Automotive and Parts Industries", in Kuchiki, Akifumi and Masatsugu Tsuji, eds., Industrial Clusters in Asia: Analyses of Their Competition and Cooperation, 226-251. Tokyo: Institute of Developing Economies, Japan External Trade Organization (IDE-JETRO).

Toyo Keizai, various years. *Kaigai Shinshutsu Kigyou Souran: Kigyou Hen [A Comprehensive Survey of Firms Overseas]*, 1996-2005 issues and CD-ROMs. Tokyo: Toyo Keizai (in Japanese).

United States, Bureau of Economic Analysis, 2004. *U.S. Direct Investment Abroad: Operations of U.S. Parent Companies and Their Foreign Affiliates: Preliminary 2002 Estimates.* Washington, D.C.: Bureau of Economic Analysis (www.bea.gov).

Xia, Na, 2000. "China's Automobile Industry to Take the Brunt of Impact of WTO Entry" (16 October 2000), attainable from internet homepage of Hong Kong Trade Development Council (http://www.tdctrade.com).

United Nations Statistics Division, 2005. *UN Commodity Trade Statistics Database (UN Comtrade)*, data downloaded in March (http://unstats.un.org/unsd/comtrade/).

Zhang, Yansheng, Zhongxin Wan, and Shuguang Zhang, 1998. *Measuring the Costs of Protection in China*. Washington, D.C.: Institute for International Economics.

Table 1: Revealed Comparative Advantage Indices (RCIs) for China and Japan in Automobiles and Automobile Parts, 1993-2003

Commodity Group	China's RCIs					Japan's RCIs				
	1993-1994	1995-1999	2000-2001	2002	2003	1993-1994	1995-1999	2000-2001	2002	2003
Autos & auto parts	0.40	0.16	0.20	0.24	0.32	2.18	1.99	2.04	2.20	2.16
Autos & trucks	0.43	0.07	0.08	0.15	0.18	2.36	2.16	2.27	2.50	2.43
Automobiles	0.33	0.07	0.08	0.16	0.19	2.35	2.19	2.41	2.65	2.57
Trucks under 5 tons	0.79	0.03	0.01	0.00	0.00	2.51	1.92	1.25	1.35	1.21
Trucks over 5 tons	1.23	0.22	0.22	0.33	0.33	2.18	2.19	1.82	2.04	2.25
Parts	0.35	0.30	0.38	0.38	0.53	1.92	1.74	1.70	1.71	1.72
Chassis with engine	0.58	0.32	0.26	0.11	0.23	2.13	1.86	1.10	1.48	1.99
Bodies	3.61	0.44	0.10	0.13	0.44	0.91	0.82	0.36	0.24	0.22
Spark engines, <1000cc	3.79	2.13	0.73	0.10	0.04	5.72	6.36	6.85	5.79	5.82
Spark engines, >1000cc	0.10	0.10	0.20	0.24	0.43	2.18	1.84	1.55	1.42	1.36
Diesel engines	0.62	0.21	0.29	0.32	0.19	2.18	1.62	1.02	0.77	0.75
Engine parts	0.75	0.62	0.59	0.62	0.72	2.09	2.27	2.47	2.57	2.50
Bumpers	0.08	0.07	0.28	0.30	0.35	1.41	1.29	1.26	1.19	1.12
Safety seat belts	0.10	0.01	0.09	0.10	0.22	0.87	0.42	0.51	0.40	0.60
Body parts	0.14	0.23	0.30	0.50	0.91	2.08	1.70	1.44	1.36	1.47
Brake linings & parts	0.17	0.09	0.15	0.39	0.65	1.63	1.26	1.26	1.28	1.34
Transmissions	0.07	0.06	0.23	0.36	0.74	4.03	4.11	4.13	4.26	4.61
Drive axles with differential	0.21	0.17	0.23	0.29	0.63	1.12	0.86	1.05	1.05	1.11
Non-drive axles, parts	0.14	0.30	0.31	0.31	0.35	2.17	1.54	1.75	1.41	1.28
Shock absorbers	0.13	0.18	0.40	0.38	0.38	1.43	1.34	1.55	1.52	1.42
Radiators	0.04	0.04	0.16	0.16	0.16	0.60	0.36	0.38	0.35	0.33
Mufflers, exhaust pipes	0.02	0.04	0.19	0.41	0.41	1.24	1.00	0.97	0.93	0.93
Clutches & parts	0.12	0.16	0.14	0.17	0.17	2.26	2.80	2.32	2.33	2.14
Steering apparatus	0.23	0.22	0.41	0.63	0.98	1.73	1.14	0.99	0.93	0.89
Tyres & tubes	0.06	0.04	0.02	0.04	0.06	1.33	1.59	1.64	1.79	1.89
Auto locks	0.17	0.10	0.31	0.47	0.55	1.81	1.39	1.25	1.02	0.97
Metal mountings	0.02	0.07	0.15	0.11	0.16	1.40	0.86	0.73	0.73	0.67
Auto seats	0.16	0.21	0.75	1.69	1.79	0.30	0.14	0.18	0.10	0.52
Lights, visual signals	0.16	0.30	0.45	0.38	0.54	1.86	1.41	1.15	1.12	1.02
Wipers, defrosters, etc.	0.68	0.62	0.71	0.58	0.57	0.43	0.31	0.18	0.20	0.15
Parts for lights, signals, wipers	0.21	0.26	0.41	0.36	0.47	2.12	1.37	1.26	1.07	1.13
Radios, sound systems	0.11	0.16	0.08	0.07	0.15	2.28	1.72	1.25	1.16	0.76
Other parts	0.48	0.55	0.77	0.47	0.52	1.24	1.15	1.33	1.47	1.47

Notes: The RCI is the ratio of share of a commodity group in total exports for a country (e.g., China or Japan) to the share of that commodity group in world exports; see Appendix Table for commodity group definitions.
Source: United Nations Statistics Division (2005).

Table 2: China's Imports of Automobiles and Automobile Parts from the World and Japan, 1992-2003 (US$ millions, except where noted [total imports])

Commodity Group	Imports from the World					Imports from Japan				
	1993-1994	1995-1999	2000-2001	2002	2003	1993-1994	1995-1999	2000-2001	2002	2003
Total imports (US$ billions)	109.79	143.84	234.32	295.17	412.76	24.81	29.84	42.15	53.47	74.15
Autos & auto parts	4,484	2,338	4,610	7,476	13,868	2,139	883	1,758	3,067	4,825
Autos & trucks	2,912	625	1,156	2,890	4,864	1,344	265	537	1,625	1,997
Automobiles	1,884	507	1,010	2,606	4,438	709	206	461	1,427	1,642
Trucks under 5 tons	577	30	8	6	8	487	19	7	4	4
Trucks over 5 tons	451	88	138	278	418	147	39	69	194	352
Parts	1,572	1,713	3,454	4,586	9,004	796	618	1,221	1,442	2,828
Chassis with engine	40	24	18	9	31	15	12	10	3	20
Bodies	184	37	11	19	107	157	19	5	2	1
Spark engines, <1000cc	105	71	34	6	3	90	56	28	5	1
Spark engines, >1000cc	43	52	172	246	562	32	37	114	88	243
Diesel engines	96	49	116	178	184	78	19	28	46	32
Engine parts	378	394	583	823	1,345	221	221	262	302	490
Bumpers	5	5	26	37	64	2	3	12	18	17
Safety seat belts	4	1	8	11	34	0	0	4	8	21
Body parts	71	142	324	762	1,844	36	61	139	239	537
Brake linings & parts	35	25	64	240	572	10	6	23	48	108
Transmissions	22	25	148	307	863	8	11	90	146	404
Drive axles with differential	12	14	29	42	110	9	5	9	12	55
Wheels	13	8	27	28	88	3	2	16	4	6
Shock absorbers	6	11	36	50	74	4	8	11	14	16
Radiators	2	2	14	18	27	1	1	6	9	8
Mufflers, exhaust pipes	1	3	19	59	77	1	1	10	17	20
Clutches & parts	7	11	15	24	37	3	6	6	9	11
Steering apparatus	14	20	60	138	306	6	12	34	54	85
Tyres & tubes	27	21	17	40	84	11	13	7	19	44
Auto locks	4	3	14	29	51	3	2	6	7	13
Metal mountings	1	4	15	14	24	0	0	5	7	8
Auto seats	3	5	29	86	167	2	3	3	4	47
Lights, visual signals	11	26	63	74	153	7	20	44	44	59
Wipers, defrosters, etc.	8	8	18	17	21	8	7	9	9	12
Parts for lights, signals, wipers	7	13	31	42	75	6	6	12	14	26
Radios, sound systems	19	31	23	25	68	12	11	1	4	13
Other parts	449	690	1,510	1,220	1,968	69	68	318	299	521

Note: See Appendix Table for commodity group definitions.
Source: United Nations Statistics Division (2005).

Table 3: Japan's Exports of Automobiles and Automobile Parts to the World and China, 1993-2003
(US$ millions, except where noted [total exports])

Commodity Group	Exports to the World					Exports to China				
	1993-1994	1995-1999	2000-2001	2002	2003	1993-1994	1995-1999	2000-2001	2002	2003
Total exports (US$ billions)	378.26	416.14	441.31	416.72	472.00	11.95	21.81	30.69	39.82	57.42
Autos & auto parts	84,739	83,670	89,244	97,627	108,419	1,567	1,071	1,427	2,610	4,414
Autos & trucks	55,089	54,592	60,396	68,510	74,973	885	398	446	1,330	1,803
Automobiles	46,025	46,837	54,847	62,583	68,293	433	303	400	1,179	1,457
Trucks under 5 tons	6,318	5,173	3,440	3,505	3,437	378	67	6	3	16
Trucks over 5 tons	2,746	2,582	2,109	2,422	3,243	74	28	39	149	330
Parts	29,650	29,078	28,848	29,117	33,446	682	673	981	1,280	2,611
Chassis with engine	513	402	148	170	304	3	0	2	1	1
Bodies	160	196	77	50	59	3	1	1	1	1
Spark engines, <1000cc	545	616	603	504	574	145	100	13	7	15
Spark engines, >1000cc	3,258	2,877	2,488	2,101	2,022	16	26	94	89	232
Diesel engines	1,166	1,081	772	609	821	68	19	30	41	36
Engine parts	3,634	4,150	4,567	4,818	5,333	183	211	161	224	407
Bumpers	290	245	219	207	234	3	6	7	9	21
Safety seat belts	127	57	83	66	105	0	0	6	9	19
Body parts	3,705	3,007	2,938	2,908	3,410	60	78	201	280	529
Brake linings & parts	1,184	999	1,045	1,115	1,349	22	22	41	60	124
Transmissions	4,566	4,788	5,070	5,131	6,175	43	30	98	104	326
Drive axles with differential	226	213	254	213	222	6	4	5	9	12
Wheels	253	225	257	257	314	2	3	15	9	23
Shock absorbers	222	244	261	278	318	17	21	14	10	14
Radiators	77	59	62	56	64	6	3	7	8	8
Mufflers, exhaust pipes	241	183	179	190	201	2	2	16	22	27
Clutches & parts	436	552	452	465	518	10	9	10	20	30
Steering apparatus	361	296	272	288	318	10	15	24	28	45
Tyres & tubes	1,979	2,623	2,469	2,688	3,278	3	2	1	1	6
Auto locks	133	121	110	90	103	6	5	4	4	6
Metal mountings	178	135	132	133	117	2	2	5	7	8
Auto seats	22	10	13	7	56	0	0	0	1	45
Lights, visual signals	447	359	309	308	332	14	14	16	18	33
Wipers, defrosters, etc.	17	12	9	8	6	1	0	1	0	0
Parts for lights, signals, wipers	245	202	178	173	209	6	9	10	10	18
Radios, sound systems	1,303	964	661	577	392	4	3	2	6	14
Other parts	4,032	4,216	4,903	5,447	6,342	45	84	188	283	567

Note: See Appendix Table for commodity group definitions.
Source: United Nations Statistics Division (2005).

Table 4: Tariffs on Automobiles and Automobile Parts in China, 2005

Commodity Group	No. of Lines	General Tariff			MFN Tariff		
		Avg.	Min.	Max.	Avg.	Min.	Max.
Autos & trucks	39	198	20	270	35	8	43
Automobiles	30	242	150	270	39	25	43
Trucks	9	52	20	70	21	8	33
Parts	90	56	11	100	15	2	36
Chassis with engine	6	60	14	100	19	8	31
Bodies	3	80	70	100	29	25	36
Spark engines, <1000cc	3	47	35	70	17	13	25
Spark engines, >1000cc	2	53	35	70	17	13	21
Diesel engines	2	13	11	14	7	5	9
Engine parts	7	22	11	35	5	2	8
Bumpers	1	100	100	100	19	19	19
Safety seat belts	1	100	100	100	19	19	19
Body parts	3	100	100	100	20	17	25
Brake linings & parts	9	63	11	100	16	6	25
Transmissions	8	59	11	100	15	6	25
Drive axles with differential	7	53	11	100	13	6	21
Non-drive axles, parts	7	53	11	100	14	6	22
Wheels	7	53	11	100	13	6	21
Shock absorbers	2	100	100	100	21	21	21
Radiators	1	100	100	100	19	19	19
Clutches & parts	6	45	11	100	14	6	21
Steering apparatus	7	53	11	100	13	6	20
Tyres & tubes	26	50	11	80	18	1	28
Auto locks	2	80	80	80	10	10	10
Metal mountings	1	80	80	80	10	10	10
Auto seats	na	na	na	na	na	na	na
Lights, visual signals	5	45	45	45	12	12	12
Wipers, defrosters, etc.	1	45	45	45	10	10	10
Parts for lights, signals, wipers	1	45	45	45	8	8	8
Radios, sound systems	2	130	130	130	18	18	18
Other parts	7	53	11	100	15	6	25

Note: na=not available.

Source: China Council for the Promotion of International Trade (2005).

Table 5: Toyo Keizai Estimates of Japanese Affiliate Activity in China, 1995-2003

Industry, Indicator	1995	1996	1997	1998	1999	2000	2001	2002	2003
NUMBER OF AFFILIATES									
All industries	1,506	2,078	2,307	2,443	2,503	2,525	2,647	2,983	3,484
Manufacturing	1,130	1,551	1,707	1,772	1,801	1,824	1,910	2,109	2,415
Transportation machinery	81	136	138	152	158	162	151	157	197
Autos & parts	51	106	106	118	123	127	131	142	181
Trade	108	175	223	267	296	301	345	431	556
Transportation machinery	4	8	12	12	11	14	26	25	18
Autos & parts	3	4	7	6	8	10	19	18	11
Storage, physical distribution	16	34	40	43	44	47	40	42	59
Other transportation services	25	34	38	44	47	47	55	65	74
Other industries	227	284	299	317	315	306	297	336	380
EMPLOYMENT OF AFFILIATES REPORTING POSITIVE EMPLOYMENT									
All industries	272,135	375,987	467,343	480,088	542,066	577,241	649,572	689,156	834,445
Manufacturing	238,855	333,273	415,140	431,631	485,756	525,374	594,331	637,271	773,125
Transportation machinery	25,042	45,317	48,326	50,115	55,048	55,701	51,778	50,602	57,426
Autos & parts	15,357	35,176	36,834	41,722	45,257	46,429	48,257	48,015	55,148
Trade	12,185	15,172	18,677	15,898	23,287	17,226	19,352	17,358	20,044
Transportation machinery	118	390	869	572	5,720	547	578	353	741
Autos & parts	118	190	643	346	5,693	511	488	199	382
Storage, physical distribution	419	1,024	1,632	2,069	2,313	2,808	3,497	4,074	5,877
Other transportation services	2,101	2,401	2,398	2,993	3,517	3,417	4,501	5,526	6,653
Other industries	18,575	24,117	29,496	27,497	27,193	28,416	27,891	24,927	28,746
ADDENDUM: NUMBER OF AFFILIATES REPORTING POSITIVE EMPLOYMENT									
All industries	1,116	1,574	1,848	1,986	2,107	2,145	2,246	2,388	2,722
Manufacturing	853	1,201	1,400	1,462	1,525	1,552	1,633	1,714	1,904
Transportation machinery	53	106	126	134	143	146	135	133	149
Autos & parts	31	81	98	106	112	114	115	120	138
Trade	73	124	173	213	251	257	286	328	414
Transportation machinery	2	7	10	9	10	13	21	16	13
Autos & parts	2	4	7	6	8	10	15	12	8
Storage, physical distribution	12	17	24	32	37	43	38	38	50
Other transportation services	20	28	32	40	42	43	49	55	62
Other industries	158	204	219	239	252	250	240	253	292

Source: Toyo Keizai (various years)

Table 6: Official Estimates of Japanese Affiliate Activity in China, 1995-2002

Industry, Indicator	1995	1996	1997	1998	1999	2000	2001	2002
ALL INDUSTRIES								
Number	908	1,249	1,395	1,407	1,573	1,712	1,557	1,870
Employment	226,353	334,247	402,279	397,460	478,905	549,412	531,400	697,402
Sales	10,342	16,058	20,832	21,867	27,251	33,550	34,053	41,009
Local, %	48	50	49	48	56	55	55	62
Japan, %	28	29	27	22	23	28	31	24
Other, %	25	21	24	30	21	16	15	14
Purchases	6,323	12,582	15,993	16,133	18,419	23,711	24,392	28,975
Local, %	34	36	40	38	46	51	46	56
Japan, %	46	47	40	28	42	40	41	32
Other, %	20	17	20	34	12	10	13	12
MANUFACTURING								
Number	746	982	1,055	1,045	1,166	1,263	1,156	1,384
Employment	206,352	304,235	368,246	359,160	440,139	508,153	491,706	647,350
Sales	7,793	11,633	15,318	15,400	19,543	26,478	26,607	32,816
Local, %	45	54	48	52	58	55	53	57
Japan, %	29	23	24	23	23	26	30	26
Other, %	26	24	28	25	20	19	17	18
Purchases	4,577	8,524	10,825	10,238	12,862	17,532	18,478	22,155
Local, %	29	40	40	41	44	48	46	52
Japan, %	49	42	38	38	41	40	38	33
Other, %	22	19	22	20	15	13	16	14
TRANSPORTATION MACHINERY MANUFACTURING								
Number	67	89	95	101	101	106	110	132
Employment	30,035	51,775	54,899	na	58,559	na	63,597	79,189
Sales	1,546	2,920	2,838	na	3,427	na	5,031	6,590
Local, %	88	90	86	na	86	na	82	76
Japan, %	5	6	8	na	9	na	14	15
Other, %	7	4	6	na	6	na	4	9
Purchases	967	2,024	1,816	na	1,784	na	3,289	4,149
Local, %	43	55	55	na	42	na	59	64
Japan, %	53	43	40	na	53	na	37	31
Other, %	4	2	5	na	5	na	4	4
TRADE								
Number	46	94	145	156	192	204	192	236
Employment	5,370	11,329	14,480	17,683	16,383	17,971	18,140	26,001
Sales	2,019	3,884	4,768	5,786	5,481	6,068	6,560	6,981
Local, %	55	35	50	34	47	54	60	82
Japan, %	22	48	32	19	26	41	34	16
Other, %	23	17	18	47	27	4	4	2
Purchases	1,566	3,795	4,593	5,473	3,867	4,791	5,247	6,113
Local, %	58	24	39	27	39	51	44	64
Japan, %	31	60	43	12	58	49	56	30
Other, %	11	16	18	61	3	0	0	6

Note: Trade includes restaruants though 2000; excludes them in 2001-2002.
Source, Japan Ministry of Economy Trade and Industry (various years)

Table 7: Summary Statistics for Chinese Affiliates of 47 Japanese Auto & Parts Makers with a Presence Guangdong, 2004-2005

Affiliate industry, variable	All Chinese Affiliates		Affiliates in Guangdong	
	Mean Value	No. of firms	Mean Value	No. of firms
ALL INDUSTRIES				
Number of affiliates	178		69	
Number of employees	64,499	127	25,471	40
Employment/firm	508	127	637	40
Mean Japanese ownership share (%)	80.68	161	82.98	58
Mean parent ownership share %)	65.86	167	68.27	63
Mean other ownership share (%)	19.33	161	17.02	58
Mean startup year	2000	175	2001	66
MANUFACTURING OF AUTOS AND AUTO PARTS				
Number of affiliates	137		63	
Number of employees	50,599	95	20,399	35
Employment/firm	533	95	583	35
Mean Japanese ownership share (%)	80.08	125	85.05	53
Mean parent ownership share %)	64.69	130	69.67	57
Mean other ownership share (%)	19.93	125	14.95	53
Mean startup year	2000	134	2001	60
MANUFACTURING OF OTHER TRANSPORTATION MACHINERY (e.g., motorcycles)				
Number of affiliates	12		2	
Number of employees	10,028	7	3,270	2
Employment/firm	1,433	7	1,635	2
Mean Japanese ownership share (%)	59.19	10	50.00	2
Mean parent ownership share %)	47.19	10	50.00	2
Mean other ownership share (%)	40.81	10	50.00	2
Mean startup year	1996	12	1994	2
OTHER INDUSTRIES (includes other manufacturing, trade, and services)				
Number of affiliates	29		4	
Number of employees	3,872	25	1,802	3
Employment/firm	155	25	601	3
Mean Japanese ownership share (%)	91.81	26	68.33	3
Mean parent ownership share %)	78.37	27	57.50	4
Mean other ownership share (%)	8.19	26	31.67	3
Mean startup year	2001	29	2000	4

Note: manufacture of autos and auto parts includes firms involved in this industry and other industries
Source: Toyo Keizai (various years); Fourin (2005); Corporate home pages

Table 8: Summary Statistics for 6 Case Study Firms

Indicator	Value
Number of firms	6
Number of employees	1,527
Employment/firm	255
Mean Japanese ownership share (%)	80
Mean parent ownership share %)	45
Mean other ownership share (%)	20
Mean startup year	2002

Source: Toyo Keizai (various years); Fourin (2005);
Corporate interviews

Table 9: Distribution Channels Used for Sales and Purchases by Interviewed Firms and Related Problems (number of firms responding positively)

Distribution Channel	Shares of Sales or Purchases				Distribution					Special		Major Problems with Channel (multiple replies possible)					
					Means		Shipper			Cust. sup-ply	Milk run						
	0%	1%-30%	31%-69%	70%-100%	Water	Road	Ch	Jp	Oth.			A	B	C	D	E	none
Sales to:																	
Japanese firms in Guangdong	0	1	1	4	0	6	2	4	1	-	5	2	1	1	1	1	4
Japanese firms in elsewhere in China	2	2	1	1	0	4	3	1	0	-	0	2	2	1	1	1	1
Chinese firms in Guangdong	5	1	0	0	0	1	0	0	0	-	0	1	1	1	0	1	0
Chinese firms in elsewhere in China	5	1	0	0	0	1	0	0	0	-	0	1	1	1	0	1	0
Other firms in Guangdong	6	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0
Other firms in elsewhere in China	5	1	0	0	0	1	1	0	0	-	0	0	1	0	0	0	0
Exports	6	0	0	0	0	0	0	0	0	-	0	0	0	0	0	0	0
Purchases from:																	
Imports from Japan	0	1	1	4	6	6	6	6	1	2	0	0	0	0	0	5	1
Imports from elsewhere	3	3	0	0	2	2	1	0	3	0	0	0	0	0	0	2	0
Japanese firms in China	3	1	1	1	0	3	0	1	2	0	1	0	1	0	0	0	1
Chinese firms in China	3	3	0	0	0	3	1	0	2	0	0	1	1	0	0	0	1
Other firms in China	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Notes: - = not relevant or not applicable.
Distribution abbreviations and definitions: Jp=by Japanese or intra-firm distributor; Ch=Chinese distributor; Oth=other distributor or unknown;
Cust. supply=customer supplies items purchased; Milk run=customer picks up.
Problem codes: A=poor transport infrastructure, B=poor or costly delivery services, C=high taxes, D=strict government regulations, E=customs procedures;
One firm reporting problems with A, B, C, and E when selling to Japanese or Chinese firms in Guangdong or elsewhere in China is located in an export-processing zone.
Source: compiled by the authors from interviews

Appendix Table 1: Definitions of Trade Commodity Categories Used in Tables 1-3

Commodity Group	HS1992 codes
Autos & auto parts	Sum of autos & trucks and auto parts
Autos & trucks	Sum of 3 categories below
Automobiles	8703-870310
Trucks under 5 tons	870421+870431
Trucks over 5 tons	8704-870421-870431
Auto parts	Sum of 28 categories below
Chassis with engine	8706
Bodies	8707
Spark engines, <1000cc	840731+840732+840733
Spark engines, >1000cc	840734
Diesel engines	840820
Engine parts	840991+840999
Bumpers	870810
Safety seat belts	870821
Body parts	870829
Brake linings & parts	870831+870839
Transmissions	870840
Drive axles with differential	870850
Non-drive axles, parts	870860
Wheels	870870
Shock absorbers	870880
Mufflers, exhaust pipes	870892
Clutches & parts	870893
Steering apparatus	870894
Tyres & tubes	401110+401120+4012+401310
Auto locks	830120
Metal mountings	830230
Auto seats	940120
Lights, visual signals	851220+851230
Wipers, defrosters, etc.	851240
Parts for lights, signals, wipers, etc.	851290
Radios, sound systems	852721+852729
Other auto parts	870899

Note: The definition of auto parts used here is relatively narrow and excludes most 6-digit categories that combine auto parts and parts for other commodities. The major exception is 851290 which includes a very small portion of bicycle parts. A more precise and wider definition is possible if HS1996 or HS2002 is used, but HS1992 is chosen here because of the desire to obtain the longest possible time series.

Appendix Table 2: Chinese Affiliates of 47 Japanese Auto & Parts Makers with a Presence in Guangdong, 2004-2005

Parent, Affiliate	Activity	Province	Ownership Shares			Start-up year	Em-ploy-ment
			Par-ent	Other Japan	Other		
AISIN SEIKI CO., LTD.	Manufacture & sales of automotive parts, housing-related equipment						
AISIN HONGDA AUTOMOBILE PARTS Co.,Ltd.	Manufacture & sales of automotive parts	Zhejiang	74.5	3	22.5	1995	189
AISIN TIANJIAN BODY PARTS Co.,Ltd.	Manufacture & sales of automotive parts	Tianjin	60	3	37	2001	195
AISIN SEIKI (Foshan) AUTOMOBILE PARTS Co., Ltd.	Manufacture & sales of automotive parts such as crank cases, timing chain covers, and intake manifolds	Guangdong	100	0	0	2004	na
Fengai (Guangzhou) Automotive Seat Parts Co., Ltd.	Manufacture of the frame of automotive seats and active parts of seats	Guangdong	49	51	0	2004	na
HANGZHOU AISIN INAX MACHINERY & ELECTRIC Co.,Ltd.	Manufacture of showers, toilets and related parts	Zhejiang	51	49	0	2002	61
TANGSHAN AISIN GEAR Co.,Ltd.	Manufacture & sales of automotive parts	Hebei	77	23	0	1996	1648
TIANJIN AISIN AUTOMOBILE PARTS Co.,Ltd.	Manufacture & sales of automotive parts	Tianjin	96.37	3.63	0	1997	616
ZHEJIANG AISIN ELITE MACHINERY & ELECTRIC Co.,Ltd.	Development, manufacture & sales of sewing machines and related parts	Zhejiang	55	0	45	2001	419
ALPHA Corp.	Manufacture of automotive parts, building metal parts, and coin lockers						
Alpha (Guangzhou) Automotive Parts Co., Ltd.	Manufacture & sales of automotive parts	Guangdong	90	10	0	2004	na
Alpha (Taishan) Lock Industry Co., Ltd.	Manufacture & sales of automotive parts	Guangdong	100	0	0	2003	na
AISAN INDUSTRY CO., LTD.	Manufacture and sales of automobile parts						
Aisan(Foshan)Auto Parts Co., Ltd.	Manufacture of throttle bodies, canisters, engine valves	Guangdong	95	5	0	2004	na
Aisan(Tianjin)Auto Parts Co.,Ltd.	Manufacture of throttle bodies, canisters, etc.	Tianjin	95	5	0	2003	na
Tianjin Aisan Automobile Parts Co.,Ltd.	Manufacture & sales of canisters	Tianjin	68.3	5	26.7	1996	347
DENSO CORP.	Manufacture & sales of electric & electronic parts for automobiles						
CHONGQING DENSO CO.,LTD.	Manufacture & sales of CDI ignition systems	Chongqing	0	100	0	1997	131
DENSO(CHINA)INVESTMENT CO.,LTD.	Holding company for DENSO group in China	Beijing	100	0	0	2003	74
DENSO(Guangzhou, Nansha) CO., LTD.	Manufacture, sales & after-sales services of automotive fuel jet devices	Guangdong	70.1	29.9	0	2004	na
GUANGZHOU DENSO CO.,LTD.	Manufacture of car air-conditioners, bus coolers and radiators	Guangdong	0	60	40	2003	284
Ri Lian Automobile Electoric Parts Trading	Import & sales of spare parts for Japanese cars	Beijing	30	52	18	2004	na
SHANGHAI DENSO FUEL INJECTION Co.,Ltd.	Manufacturer of fuel jet pump for diesel cars	Shanghai	0	34	66	2003	625
TIANJIN DENSO AIR-CONDITIONER CO.,LTD.	Manufacture & sales of automotive A/C systems, radiators, etc.	Tianjin	51	49	0	1998	304

Appendix Table 2: Chinese Affiliates of 47 Japanese Auto & Parts Makers with a Presence in Guangdong, 2004-2005

Parent, Affiliate	Activity	Province	Ownership Shares			Start-up year	Em-ploy-ment
			Par-ent	Other Japan	Other		
TIANJIN DENSO ELECTRONICS CO.,LTD.	Manufacture & sales of automotive electronic control devices and parts	Tianjin	85.9	7	7.1	1998	233
TIANJIN DENSO ENGINE ELECTRICAL PRODUCTS CO.,LTD.	Manufacture & sales of starters and alternators	Tianjin	85	15	0	1996	419
TIANJIN FAWER DENSO AIRCONDITIONER Co.,Ltd.	Manufacture of car air-conditioners	Tianjin	0	60	40	2003	31
YANTAI SHOUGANG DENSO CO.,LTD.	Manufacture & sales of car air-conditioners and parts	Shandong	30	20	50	1995	381
F-TECH INC.	Manufacture of suspensions and other automotive parts						
F.Tech Zhongshan Inc.	Manufacture & sales of automotive parts	Guangdong	73.2	20.7	6.1	2002	456
FUTABA INDUSTRIAL CO., LTD.	Manufacture & sales of automotive parts such as mufflers						
Guangzhou Futaba Automotive Parts Co., Ltd.	Manufacture & sales of automotive parts	Guangdong	100	0	0	2004	1
Tianjin Futaba Shye Zhan Machines Co., Ltd.	Manufacture & sales of automotive parts	Tianjin	100	0	0	2004	2
Tianjin Shuang Shye Mechanical Industrial Co., Ltd.	Manufacture & sales of automotive parts	Tianjin	50	50	0	2002	141
Hitachi Unisia Automotive, Ltd.	Manufacture & sales of automotive parts, OA machines, housing related equipment, etc.						
Shanghai Tamp Auto Parts Co., Ltd.	Manufacture of clutch parts	Shanghai	15	35	50	1992	na
Guangzhou Hitachi Unisia Automotive Parts Co., Ltd.	Manufacture of engine parts	Guangdong	100	0	0	2004	na
HONDA MOTOR CO., LTD.	Manufacture & sales of autos, motorbikes, general motorized equipment						
Dongfeng Honda Automobile (Wuhan) Co., ltd.	Manufacture of automobiles	Hubei	40	10	50	2004	930
Guangzhou Honda Automobile Co.,Ltd.	Manufacture & sales of automobiles	Guangdong	50	0	50	1999	4,300
Dongfeng Honda Autoparts Co.,Ltd.	Manufacture of automotive parts	Guangdong	50	na	na	1995	na
Dongfeng Honda Engine Co.,Ltd.	Manufacture of automotive engines	Guangdong	50	0	50	1999	500
Futian Nikkon Logistics(Guangzhou)Co.,Ltd.	Transportation, packaging and warehouse keeping	Guangdong	20	30	50	1997	1385
Honda Automobile (China) Co., Ltd.	Manufacture of automobiles	Guangdong	65	0	35	2003	na
Honda Motor (China) Investment Co., Ltd.	Holding company	Beijing	100	0	0	2004	35
Honda-Mindong Generator Co.,Ltd.	Manufacture & sales of small power generators and pumps	Fujian	60	0	40	1995	na
Jialing-Honda Motors Co.,Ltd.	Manufacture & sales of engines for motorbikes and general uses	Chongqing	50	0	50	1993	na
Sundiro Honda Motorcycle Co.,Ltd.	Manufacture & sales of motorbikes	Shanghai	50	0	50	2002	6400
Wuyang-Honda Motors(Guangzhou)Co.,Ltd.	Manufacture & sales of motorbikes	Guangdong	50	0	50	1992	3,000
Guangzhou Zhu-Tie Metal	Manufacture of automotive parts	Guangdong	70	na	na	na	na

Appendix Table 2: Chinese Affiliates of 47 Japanese Auto & Parts Makers with a Presence in Guangdong, 2004-2005

Parent, Affiliate	Activity	Province	Ownership Shares			Start-up year	Em-ploy-ment
			Par-ent	Other Japan	Other		
Honda Foundry Co., Ltd.	Manufacture of pistons, engine & suspension parts, aluminum products, machine tools, metallic molds, jigs						
Guangdong Zhaoqing Honda Foundry Co., Ltd.	Manufacture of pistons & cylinder heads for motorbikes and automobiles	Guangdong	50	0	50	1995	na
Honda Lock Mfg. Co., Lid.	Manufacture of automotive parts						
Honda Lock (Guangdong) Co., Ltd.	Manufacture of key sets, door mirrors, door locks, door handles for automobiles and motorbikes	Guangdong	50	0	50	1996	72
HONGO CO., LTD.	Planning, manufacture & sales of automotive parts and machine parts						
GH Auto Parts Industries Inc.	Manufacture of automotive frame parts, dies, etc.	Guangdong	50	50	0	2002	913
Imasen Electric Industrial Co., Ltd.	Manufacture & sales of automotive parts and transportation equipment parts						
Guangzhou Imasen Electric Ind.Co.,Ltd.	Manufacture of automotive seat adjusters	Guangdong	100	0	0	2002	149
ISUZU MOTORS LTD.	Manufacture & sales of commercial cars and diesel engines						
Beijing Beiling Special Automobile Co.,Ltd.	Manufacture & sales of aluminum body for small-sized trucks	Beijing	22	28	50	1995	103
Guangzhou Isuzu Bus Co.,Ltd.	Assembly & sales of medium and large-sized buses	Guangdong	49	0	51	2000	474
Isuzu(China)Holding Co.,Ltd.	Business control for Asian region	Beijing	100	0	0	1995	12
Isuzu(Shanghai)Tradetech Co.,Ltd.	Import, export & sales of commercial cars	Shanghai	0	100	0	1997	23
KASAI KOGYO CO., LTD.	Manufacture & sales of automotive interior parts						
Guangzhou Kasai Automobile Interior Parts	Manufacture & sales of automotive interior parts	Guangdong	50.1	33.9	16	2004	137
Keihin Corp.	Manufacture & sales of electronic fuel jet devices and other automotive parts						
Dongguan Keihin Engine Management System Co.,Ltd.	Manufacture & sales of automotive fuel supply systems and parts, engine-related devices	Guangdong	100	0	0	2002	na
Keihin R&D China Co.,Ltd.	R&D of electronic control units and engine-related devices	Shanghai	100	0	0	2003	na
Nanjing Keihin Carburetor Co.,Ltd.	Manufacture & sales of motorbike fuel equipment	Jiangsu	85	0	15	1997	na
Zhanjiang Deni Carburetor Co.,Ltd.	Manufacture & sales of automotive and motorbike carburetors	Guangdong	20	0	80	1994	na

Appendix Table 2: Chinese Affiliates of 47 Japanese Auto & Parts Makers with a Presence in Guangdong, 2004-2005

Parent, Affiliate	Activity	Province	Ownership Shares			Start-up year	Em-ploy-ment
			Par-ent	Other Japan	Other		
KIKUCHI CO., LTD.	Manufacture & sales of automotive press parts						
Auto Parts Alliance(China)Ltd.	Manufacture & sales of automotive press parts	Guangdong	50	50	0	2002	471
KOTOBUKIYA FRONTE CO., LTD.	Manufacture of automotive interior materials						
Guangzhou GKI Car Interior Parts Co.,Ltd.	Development, manufacture & sales of automotive interior materials	Guangdong	60	40	0	2003	na
KYUSHU YANAGAWASEIKICO., LTD.	Manufacture of automotive and motorbike general-purpose parts						
Guangzhou Yanagawa Seiki Co.,Ltd.	Manufacture of motorbike aluminum wheels, hubs, and panels	Guangdong	50	0	50	1995	270
Tianjin Yanagawa Die Casting Co.,Ltd.	Manufacture of motorbike aluminum wheels and brake panels	Tianjin	50	0	50	1995	190
Marujun Co. Ltd.	Manufacture of automotive press parts and design & manufacture of dies						
Guangzhou Marujun Co.,Ltd.	Manufacture of automotive body press parts	Guangdong	100	0	0	2002	70
Wuhan Marujun Co.,Ltd.	Manufacture of automotive press parts and manufacture & sales of dies	Hubei	100	0	0	2003	na
MITSUBA Corp.	Manufacture of electric & electronic parts for automobiles						
Guangzhou Mitsuba Electric Co.,Ltd.	Manufacture of electric & electronic parts for automobiles and motorbikes	Guangdong	na	na	na	2000	128
Mitsuba Electric(Qingdao)Co.,Ltd.	Manufacture & sales of motorbike starters	Shandong	na	na	na	1997	48
Mitsubishi Motors Corp.	Assembly, manufacture & sales of automobiles						
Hunan Changfeng Automobile Production LLC	Manufacture & sales of automobiles and parts	Hunan	21.3	2.7	76.1	1996	1869
Mitsubishi Motor(Tianjin)Co.,Ltd.	Sales of Mitsubishi Motors' cars and parts	Tianjin	100	0	0	2000	5
Mitsubishi Motors(Dalian)Co.,Ltd.	Sales of Mitsubishi Motors' cars and parts	Liaoning	100	0	0	2000	5
Mitsubishi Motors(Guangzhou)Co.,Ltd.	Sales of Mitsubishi Motors' cars and parts	Guangdong	55	0	45	1999	20
Mitsubishi Motors(Shanghai)Co.,Ltd.	Sales of Mitsubishi Motors' cars and parts	Shanghai	100	0	0	1998	40
Shenyang Aerospace Mitsubishi Motors Engine Manufacturing Co.,Ltd.	Manufacture, sales & after services of automobile gasoline engines and parts	Liaoning	25	9.3	65.7	1997	566

Appendix Table 2: Chinese Affiliates of 47 Japanese Auto & Parts Makers with a Presence in Guangdong, 2004-2005

Parent, Affiliate	Activity	Province	Ownership Shares			Start-up year	Em-ploy-ment
			Par-ent	Other Japan	Other		
MORIROKU CO., LTD.	Sales of plastic products for automobiles, household electrical appliances, etc.						
Guangzhou Moriroku Technology,Co.,Ltd.	Manufacture of plastic parts for automobiles	Guangdong	na	na	na	2001	67
Moriroku(Shanghai)Co.,Ltd.	Trading	Shanghai	na	na	na	2002	5
Suzhou Moriroku Technology Co.,Ltd.	Manufacture of plastic parts	Jiangsu	na	na	na	2002	22
MUSASHI SEIMITSU INDUSTRY CO., LTD.	Manufacture & sales of transportation equipment						
Musashi Auto Parts China Co.,Ltd.	Manufacture & sales of automobile parts, etc.	Guangdong	100	0	0	2003	75
NHK SPRING CO., LTD.	Manufacture & sales of springs, seats, etc.						
Chongquing Quingling NHK Seat Co.,Ltd.	Manufacture & sales of automotive seats	Chongqing	30	60.8	9.2	1998	169
NHK Spring Precision (Guangzhou) Co., Ltd.	Manufacture & sales of automotive engine valve springs, motorbike chain tentioners	Guangdong	100	0	0	2003	na
	Manufacture & sales of carbon products, carbon shafts, automotive seat parts	Guangdong	100	0	0	2003	7
NHK-UNI Spring(Guangzhou)Co.,Ltd.	Manufacture & sales of coil springs, stabilizers	Guangdong	60	40	0	2002	130
	Manufacture & sales of automotive and motorbike control cable rubbers	Guangdong	50	0	50	2003	100
NIHON PLAST CO., LTD.	Manufacture & sales of steering, interior panels and other automotive parts						
Zhongshan Plast Co., Ltd.	Manufacture & sales of airbag modules, steering wheels and other automotive parts	Guangdong	85.1	14.9	0	2004	99
NIPPON CABLE SYSTEM INC.	Manufacture & sales of automobile control cables and related systems						
Chongqing TSK Auto Parts Co.,Ltd.	Manufacture & sales of automobile control cables	Chongqing	0	100	0	2003	na
Chongqing TSK Control Cable System Co.,Ltd.	Manufacture & sales of automobile control cables	Chongqing	53	4	43	1995	471
Guangzhou TSK Control Cable Co.,Ltd.	Manufacture & sales of automobile control cables and window regulators	Guangdong	0	100	0	2002	na
Shenzhen TSK Cable Systems Co.,Ltd.	Manufacture & sales of automobile control cables	Guangdong	na	75	na	2001	na
Yantai TSK Cable System Co.,Ltd.	Manufacture & sales of automobile window regulator systems	Shandong	100	0	0	2004	6

Appendix Table 2: Chinese Affiliates of 47 Japanese Auto & Parts Makers with a Presence in Guangdong, 2004-2005

Parent, Affiliate	Activity	Province	Ownership Shares			Start-up year	Em-ploy-ment
			Par-ent	Other Japan	Other		
NISSAN MOTOR CO., LTD.	Assemble, manufacture & sales of automobiles						
Dongfeng Motor Co.,Ltd.	Manufacture & sales of automobiles	Hubei	50	0	50	2003	na
Nissan Forklift(Shanghai)Ltd.	Control of sales of forklifts and transportation equipment	Shanghai	na	na	na	2002	na
Zhengzhou Nissan Automobile Co.,Ltd.	Assemble & sales of vehicles	Henan	na	na	na	1995	1,800
Aeolus Automobile Co., Ltd.	Manufacture & sales of automobiles	Guangdong	na	na	na	na	na
NSK Ltd.	Manufacture & sales of bearings and machine parts						
Changshu NSK Needle Bearing Co., Ltd.	Manufacture & sales of bearings	Jiangsu	67.9	32.1	0	2004	na
Guizhou HS NSK Bearings Co.,Ltd.	Manufacture & sales of bearings	Guizhou	40	0	60	1998	112
Kunshan NSK Co.,Ltd.	Manufacture & sales of bearings	Jiangsu	68	32	0	1995	658
NSK Steering Systems Dongguan Co.,Ltd.	Manufacture & sales of steering columns and steering joints	Guangdong	100	0	0	2003	47
NSK(China)Investment Co.,Ltd.	Control of the affiliates in China	Shanghai	100	0	0	2003	11
NSK(Shanghai)Trading Co.,Ltd.	Sales of bearings	Shanghai	100	0	0	2001	21
Timken-NSK Bearings(Suzhou)Co.,Ltd.	Manufacture & sales of bearings	Jiangsu	25	25	50	2004	109
Zhangjiagang NSK Precision Machinery Co.,Ltd.	Manufacture & sales of bearing parts	Jiangsu	0	100	0	2002	44
NTN CORP.	Manufacture & sales of bearings, CVJ and precision instruments						
Beijing NTN-Seohan Driveshaft Co., Ltd.	Manufacture & sales of CVJ	Beijing	40	0	60	2003	na
Changzhou NTN Corp.	Development, manufacture & sales of needles, bearings, etc.	Jiangsu	51	0	49	2004	na
Guangzhou NTN-Yulon drivetrain Co.,Ltd.	Manufacture, assembly & sales of CVJ	Guangdong	60	0	40	2002	na
NTN-NIDEC(Zhejiang)Corp.	Manufacture & sales of bearing units	Zhejiang	60	40	0	2002	780
Shanghai NTN Corp.	Manufacture & sales of CVJ cassettes, axle units, needle roller bearings and other auto parts	Shanghai	95	5	0	2002	na
NUKABE Corp.	Process of engine parts , and manufacture & sales of compressors and auto parts						
???	Manufacture of automotive motor shafts, air-conditioner parts	Guangdong	0	100	0	2002	200
OGURA CLUTCH CO., LTD.	Manufacture & sales of clutches, brakes and textile tension machines						
Ogura Clutch(Dongguan)Co.,Ltd.	Manufacture & sales of clutches for car air conditioners	Guangdong	100	0	0	2004	77
Ogura Clutch(Wuxi)Co.,Ltd.	Manufacture & sales of clutches for industrial uses in general	Jiangsu	100	0	0	2004	6

Appendix Table 2: Chinese Affiliates of 47 Japanese Auto & Parts Makers with a Presence in Guangdong, 2004-2005

Parent, Affiliate	Activity	Province	Ownership Shares			Start-up year	Em-ploy-ment
			Par-ent	Other Japan	Other		
Sanoh Industrial Co., Ltd.	Manufacture & sales of automotive parts, security equipment and electrical products						
Guangzhou Sanoh Seikan Co.,Ltd.	Manufacture & sales of automotive parts	Guangdong	60	na	na	1999	69
Shanghai Sanoh Mechanical Manufacture Co.,Ltd.	Manufacture & sales of manufacturing machines for automotive parts	Shanghai	60	na	na	1999	43
Sanjo Machine Works, Ltd.	Manufacture of industrial machines, dies, forging parts, etc.						
Shunde,Lecong,Sanjo Forging Co.,Ltd.	Manufacture of forging parts for sewing machines, motorbikes, automobiles	Guangdong	65	10	25	1996	81
Stanley Electric Co., Ltd.	Manufacture & sales of automotive electric and electronic parts, other electronic parts						
Chongqing Hua-Ya Stanley Electric Co.,Ltd.	Manufacture of lights for automobiles and motorbikes	Chongqing	53	0	47	1995	114
Chongqing Wu Zhou Stanley Electric Co., Ltd.	Manufacture of lights for automobiles and motorbikes	Chongqing	48	5	47	1995	63
Guangzhou Stanley Electric Co.,Ltd.	Manufacture of lights for automobiles and motorbikes, and electronic instruments	Guangdong	60	10	30	2003	302
Guangzhou Vigo Stanley Electric Co.,Ltd.	Manufacture of lights for automobiles and motorbikes	Guangdong	50	0	50	1999	138
Shanghai Stanley Electric Co.,Ltd.	Sales of light-emitting diodes, light bulbs, strobes, LCD devices and related products	Shanghai	70	30	0	1997	22
Shenzhen Stanley Electric Co.,Ltd.	Manufacture & export of electronic machines	Guangdong	70	30	0	2002	397
Suzhou Stanley Electric Co.,Ltd.	Manufacture & export of LED related products and electronic machines	Jiangsu	100	0	0	2001	241
Tianjin Stanley Electric Co.,Ltd.	Manufacture of automotive light bulbs, electronic parts, dies, etc.	Tianjin	90	0	10	1997	621
Tianjin Stanley Sakata Components Co.,Ltd.	Manufacture & sales of automotive light bulbs, electronic parts, etc.	Tianjin	29.9	70.1	0	1997	na
SHOWA CORP.	Manufacture & sales of automotive parts and hydraulic machinery for boats						
Guangzhou Showa Autoparts Co.,Ltd.	Manufacture & sales of shock absorbers for cars and motorbikes	Guangdong	52.8	7.9	39.3	1994	601
Shanghai Showa Autoparts Co.,Ltd.	Manufacture & sales of automotive parts	Shanghai	100	0	0	2002	223
Sichuan Ningjiang Showa Shockabsorber Co.,Ltd.	Manufacture of motorbike shock absorbers and automotive parts	Sichuan	40	10	50	1996	106

Appendix Table 2: Chinese Affiliates of 47 Japanese Auto & Parts Makers with a Presence in Guangdong, 2004-2005

Parent, Affiliate	Activity	Province	Ownership Shares			Start-up year	Em-ploy-ment
			Par-ent	Other Japan	Other		
SHIROKI CORP.	Manufacture & sales of automotive interior & exterior parts and welfare-care instruments						
Guangzhou Shiroki Corp,.	Manufacture & sales of automotive parts	Guangdong	100	0	0	2003	na
Kunshan Shiroki Corp.	Manufacture & sales of automotive parts	Jiangsu	100	0	0	2003	na
TOYODA GOSEI CO., LTD.	Manufacture & sales of automotive rubber, plastic and urethane products						
Fuzhou Fu-Yue Rubber & Plastic Ind.Co.,Ltd.	Manufacture of auto ceilings and functional parts	Fujian	25.2	0	74.8	2000	91
Tianjin Star-Light Rubber & Plastic Co.,Ltd.	Manufacture of automotive body ceiling products	Tianjin	48.78	9.22	42	1994	394
Tianjin Toyoda Gosei Co.,Ltd.	Manufacture of automotive functional parts, interior & exterior parts, safety system products	Tianjin	85.9	5	9.1	1996	336
Toyoda Gosei Opto-E.(Shanghai)Co.,Ltd.	Sales of LED	Shanghai	70	15	15	2003	7
Toyoda Gosei (Foshan) Auto Parts Co., Ltd.	Manufacture of automotive interior & exterior parts	Guangdong	65	35	0	2004	na
Toyoda Gosei (Foshan) Rubber Parts Co., Lid.	Manufacture of automotive body seal parts	Guangdong	60	40	0	2004	52
Toyoda Gosei (Tianjin) Precision Products	Manufacture & sales of mobile phone's frames	Tianjin	90	10	0	2004	na
Toyoda Gosei(Zhangjiagang)Co.,Ltd.	Manufacture of automotive safety system products	Jiangsu	100	0	0	2003	267
Toyoda Gosei(Zhangjiagang)Plastic Parts Co.,Ltd.	Manufacture of automotive interior & exterior parts	Jiangsu	90	10	0	2003	62
TOYOTA MOTOR CORP.	Assembly, manufacture & sales of automobiles						
FAW Toyota Changchun Engine Co., Ltd.	Manufacture of V6 engines	Jilin	50	0	50	2004	na
FAW Toyota Motor Sales Co.,Ltd.	Sales of automobiles, parts and driving articles	Beijing	36	30	36	2003	275
Guangqi Toyota Engine Co., Ltd.	Manufacture of engine parts and AZ engines	Guangdong	70	0	30	2004	na
Guangzhou Toyota Motor Co., Ltd.	Manufacture & sales of automobiles	Guangdong	50	0	50	2004	na
Sichuan TOYOTA Nitan Development Co.,Ltd.	Mining, processing & sales of peat	Sichuan	100	0	0	2002	24
Sichuan Toyota Motor Co.,Ltd.	Manufacture of automobiles	Sichuan	45	5	50	2000	1,150
Tianjin FAW Toyota Motor Co.,Ltd.	Manufacture of automobiles	Tianjin	40	10	50	2002	888
Tianjin Fengjin Auto Parts Co.,Ltd.	Manufacture & sales of CVJ, axels, steering columns	Tianjin	90	0	10	1998	270
Tianjin Jinfeng Auto Parts Co.,Ltd.	Manufacture & sales of steering, propeller shafts	Tianjin	30	0	70	1997	400
Tianjin Toyota Forging Co.,Ltd.	Manufacture & sales of automotive forging parts	Tianjin	100	0	0	1998	80
Tianjin Toyota Motor Engine Co.,Ltd.	Assembly of engines, and manufacture & sales of cast-steel and aluminum materials	Tianjin	50	0	50	1998	730
Toyota FAW (Tianjin) Dies Co., Ltd.	Manufacture of automotive large press dies	Tianjin	90	0	10	2004	na
Toyota Motor Technical Center(China)Co.,Ltd.	Research on auto & parts, and technical consulting services on nationalization	Tianjin	100	0	0	1998	100
Toyota Motor(China)Investment Co.,Ltd.	Investment to affiliates, and support for sales, service & marketing activities	Tianjin	100	0	0	2001	150

Appendix Table 2: Chinese Affiliates of 47 Japanese Auto & Parts Makers with a Presence in Guangdong, 2004-2005

Parent, Affiliate	Activity	Province	Ownership Shares			Start-up year	Em-ploy-ment
			Par-ent	Other Japan	Other		
TOYOTA BOSHOKU CORP.	Manufacture & sales of automotive air filters, interior & exterior parts						
Araco(Shanghai)Co.,Ltd.	Development & design of automotive parts, and support for manufacture of automotive interior parts	Shanghai	100	0	0	2002	42
Chengdu Araco Interio-Parts Co.,Ltd.	Manufacture & sales of automotive seats, interior parts, etc.	Sichuan	53	5	42	2000	194
Fengai (Guangzhou) Automotive Seat Parts	Manufacture of frames and functional parts of automotive seats	Guangdong	51	49	0	2004	na
Guangzhou Intex Auto Parts Co., Ltd.	Manufacture of automotive interior parts	Guangdong	75	0	25	2004	na
Kunshan Takanichi Automobile Interior Trim Parts Co.,Ltd.	Manufacture & sales of door trims, seat covers, engine hood covers	Jiangsu	85.07	14.93	0	1996	170
Ningbo Araco Co.,Ltd.	Manufacture of automotive seat covers	Zhejiang	55	40	5	2003	319
Tianjin Intex Auto Parts Co.,Ltd.	Manufacture of seats, door trims, ceilings, floor carpets, etc.	Tianjin	75	0	25	2005	167
Tianjin Kahou Automobile Decoration Co.,Ltd.	Manufacture of automotive seats	Tianjin	48	4	48	1995	1,203
Toyodabo Ningbo Co., Ltd.	Development, manufacture & sales of automotive interior parts	Zhejiang	100	0	0	2004	76
Toyodabo(Shanghai)Co.,Ltd.	Manufacture & sales of luggage nets, straps, webbings	Shanghai	90	10	0	2002	130
Toyodabo(Tianjin)Co.,Ltd.	Manufacture of air cleaners, oil filters, cabin air filters	Tianjin	60	40	0	2004	30
T. RAD Co., Ltd.	Manufacture & sales of radiators for cars, building machines, industrial machines						
Qingdao Toyo Auto Radiator Co.,Ltd.	Manufacture of automotive aluminum radiators	Shandong	39	10	51	1995	110
Toyo Heat Exchanger (Zhongshan) Co.,Ltd.	Manufacture & sales of heat exchangers for air-conditioners	Guangdong	85	na	na	2002	na
TS Tech Co. Ltd.	Auto & motorcycle seats						
Guangzhou TS Automotive Interior Systems Co., Ltd.	Manufacture & sales of automotive seats	Guangdong	na	na	na	2001	na
GUANGZHOU TECH INTERIOR TRIM MANUFACTURING CO.,LTD.	na	Guangdong	na	na	na	na	na
Tianjin TS Plastic Products Co.,Ltd.	Manufacture & sales of plastic products and motorbike seats	Tianjin	0	60	40	1994	74
Chongqing TS Plastic Products Co.,Ltd.	Manufacture & sales of plastic products and motorbike seats	Chongqing	0	55	45	1995	46

Appendix Table 2: Chinese Affiliates of 47 Japanese Auto & Parts Makers with a Presence in Guangdong, 2004-2005

Parent, Affiliate	Activity	Province	Ownership Shares			Start-up year	Em-ploy-ment
			Par-ent	Other Japan	Other		
YACHIYO INDUSTRY CO., LTD.	Manufacture & sales of automotive parts						
Yachiyo Zhongshan Manufacturing Co.,Ltd.	Manufacture & sales of automotive parts	Guangdong	100	0	0	2003	40
YAZAKI CORPORATION	Development & sales of electric wires, automotive parts etc.						
Chongqing Yazaki Meter Co.,Ltd.	Manufacture of automotive meters	Chongqing	30	10	60	1996	269
Hangzhou Yazaki Electric Co. Ltd.	Manufacture of junction blocks	Zhejiang	100	0	0	2004	380
Hangzhou Yazaki Meter Co., Ltd.	Manufacture of automotive meters	Zhejiang	100	0	0	2004	485
Hangzhou Yazaki Parts Co.,Ltd.	Manufacture of automotive parts	Zhejiang	100	0	0	2002	970
Huanan Yazaki(Shantou)Auto Parts Co.,Ltd.	Manufacture & sales of wire harness	Guangdong	100	0	0	2001	1,955
Shanghai Yazaki Electronic Parts Co., Ltd.	Sales of electric and electronic parts	Shanghai	100	0	0	2003	7
Shantou Special Economic Zone Yazaki Auto Parts Co.,Ltd.	Manufacture of automotive wire harness	Guangdong	100	0	0	1990	7,941
Tianjin Yazaki Automotive Parts Co.,Ltd.	Manufacture of wire harness	Tianjin	95.3	4.7	0	1990	4,175
Yantai Yazaki Automotive Parts Co.,Ltd.	Manufacture of wire harness	Shandong	90.4	9.6	0	2001	3,268
YOROZU CORP.	Manufacture & sales of auto suspensions, bodies, engine parts						
Yorozu Bao Mit Automotive Co.,Ltd.	Manufacture & sales of automotive suspension parts etc.	Guangdong	51	24	25	2003	2
Yuasa Corp.	Manufacture of electric batteries and building of power supply systems						
Tianjin Yuasa Batteries Co.,Ltd.	Manufacture & sales of motorbike storage batteries	Tianjin	76.9	5	18.1	1994	na
Yuasa Battery(Guangdong)Co.,Ltd.	Manufacture & sales of batteries for automobiles and industrial machines	Guangdong	100	0	0	1996	343
Yuasa Battery(Shunde)Co.,Ltd.	Manufacture & sales of automotive storage batteries	Guangdong	100	0	0	2003	100
UNIPRES CORP.	Manufacture & sales of automotive press parts etc.						
Guangzhou Unipres	Manufacture & sales of automotive body press parts	Guangdong	100	0	0	2003	18
YUTAKA GIKEN CO., LTD.	Manufacture & sales of automotive parts						
Chongqing Jin Feng Mechanical Co.,Ltd.	Manufacture of motorbike disk brakes	Chongqing	60	0	40	1997	na
Foshan Fengfu Auto Co.,Ltd.	Manufacture of automotive parts	Guangdong	65	na	na	2000	na

For ownership shares, "other Japan" refers to shares of foreign affiliates of the parent company and the shares of other Japanese companies or their foreign affiliates, while "other" includes shares of local Chinese firms and shares non-Japanese MNCs; start-up year sometimes refers to the year of affiliate establishment.
Source: Toyo Keizai (various years); Fourin (2005); corporate home pages.

Appendix Table 3: Interview Results from Affiliates in Guangdong China: Sales and Purchases

Company, Sales/Purchaes, Distribution Channel	Market Share	Distribution Means-Distributor	Major Problems with Distribution Channel; Notes
Company A			
Sales (major products=auto body parts)			
Japanese firms in Guangdong	92%	rd-jd, mr	A=bad roads, accidents, congestion; D=load limits; downtown entry time limits
Japanese firms in elsewhere in China	8%	rd-cd	A=bad roads, accidents, congestion; D=load limits; downtown entry time limits
Purchases (main items=steel plates, etc.)			
Imports from Japan	97%	wt-jd; rd-cd	E=time-consuming & unpredictable customs procedures; customer suppliers
Imports from elsewhere	3%	wt-unknown	E=time-consuming & unpredictable customs procedures
Company B			
Sales (major products=drive train parts-joints for shafts)			
Japanese firms in Guangdong	18%	rd-unknown, mr	none
Japanese firms in elsewhere in China	76%	rd-cd	B=supervision of Chinese distributor
Other firms in elsewhere in China	6%	rd-cd	B=supervision of Chinese distributor
Purchases (main items=metal parts for joints, etc.)			
Imports from Japan	60%	wt-jd; rd-cd	E=time-consuming & unpredictable customs procedures
Japanese firms in China	35%	rd-unknown	unknown
Chinese firms in China	5%	rd-unknown	unknown
Company C			
Sales (major products=auto body parts)			
Japanese firms in Guangdong	100%	rd-cd, mr	none (major customer is nearby)
Purchases (main items=steel plates, etc.)			
Imports from Japan	100%	wt-jd; rd-cd	No major problem, customer supplies
Company D			
Sales (major products=fuel tubes, brake tubes, etc.)			
Japanese firms in Guangdong	100%	rd-ji, rd-cd, mr	none (major customer is nearby)
Purchases (main items=steel pipes, etc.)			
Imports from Japan	80%	wt-jd, rd-cd	E=time-consuming & unpredictable customs procedures
Japanese firms in China	17%	rd-unknown	none
Chinese firms in China	3%	rd-unknown	none

Appendix Table 3 (continued)

Company, Sales/Purchaes, Distribution Channel	Market Share	Distribution Means-Distributor	Major Problems with Distribution Channel; Notes
Company E			
Sales (major products=air conditioners, engine cooling system, etc.)			
Japanese firms in Guangdong	53%	rd-jd	none
Japanese firms in elsewhere in China	42%	rd-jd	none
Purchases (main items=various parts for major products)			
Imports from Japan	25%	wt-jd, wt-ot, rd-cd	E=time-consuming & unpredictable customs procedures
Imports from elsewhere	5%	unknown	unknown
Japanese firms in China	70%	rd-jd	B=transportation costs
Company F (located in export-processing zone)			
Sales (major products=control cables)			
Japanese firms in Guangdong	88%	rd-ji; mr	A=congestion, B=transportation costs, C=import tariffs, E=time-consuming customs procedures
Japanese firms in elsewhere in China	3%	rd-cd	A=congestion, B=transportation costs, C=import tariffs, E=time-consuming customs procedures
Chinese firms in Guangdong	2%	rd-unknown	A=congestion, B=transportation costs, C=import tariffs, E=time-consuming customs procedures
Chinese firms in elsewhere in China	4%	rd-unknown	A=congestion, B=transportation costs, C=import tariffs, E=time-consuming customs procedures
Purchases (main items=metal parts, steel materials & wires, etc.)			
Imports from Japan	80%	wt-jd, rd-cd	E=time-consuming & unpredictable customs procedures
Imports from elsewhere	3%	wt-unknown, rd-cd	E=time-consuming & unpredictable customs procedures
Chinese firms in China	17%	rd-cd	A=bad roads, congestion; B=poor service quality

Distribution codes: rd=distributed by road; wt=distributed by water; jd=by Japanese distributor; ji=intra-firm distributor; cd=Chinese distributor; ot=other companies; mr=milk run (customer picks up)

Problem codes: A=poor transport infrastructure, B=poor or costly delivery services, C=high taxes, D=strict government regulations, E=other problems.